eHealth
priorities and strategies
in European countries

••• **eHealth ERA report - March 2007**
Towards the Establishment
of a European eHealth Research Area

@Health

eHEALTH ERA

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server (http://www.europa.eu).

Cataloguing data can be found at the end of this publication.

eHealth
priorities
and strategies
in European
countries

eHealth ERA report
March 2007

Towards the Establishment
of a European eHealth
Research Area

Acknowledgements

Foreword

As we identified some three years ago now, eHealth matters. It matters to the whole of Europe, our eHealth information space.

This comprehensive overview charts the eHealth strategies and priorities in not only the 27 EU Member States but also five other European countries. It is an important milestone in the development of eHealth in the European Union. It shows the extent to which the individual countries are and have been willing to commit their energies to progressing the eHealth agenda in Europe.

In 2004, the European eHealth action plan initiated a commitment by all EU member states to develop a national or regional roadmap for eHealth. This study confirms that good progress on these strategies and roadmaps has been made across the continent. Furthermore, by providing a transparent view of the current eHealth national landscapes, there is now more potential for working together in a clear and synergistic way.

Collaboration among Member States and the European Commission, both in research programmes as well as in deployment strategies, has already resulted in great achievements and concrete benefits for our citizens. A key focus for the next stage should be large-scale connectivity and interoperability between eHealth systems. I hope that the European Member States can be encouraged to take the necessary steps towards applying a structured roadmap that will lead to interoperable eHealth solutions that enable not only continuity of care and cross-border eHealth services, but also a sustainable and high-quality eHealth market in Europe.

Our ambitions in this important area should be threefold. First, we should ensure that Europe continues to lead in the deployment of high-quality eHealth solutions. Second, we need to ensure that these eHealth solutions respond to patients', consumers', and health professionals' needs, and have direct impact on access, quality, cost, and safety of healthcare. Third, we should reinforce the innovation and industrial potential that eHealth offers.

We need to work together on win-win strategies for all eHealth stakeholders – national and regional authorities, industry, and especially citizens. Only then will we succeed. Our mutual goal must be to accelerate the uptake of eHealth throughout Europe.

This wide-scale and well-analysed survey provides useful material for all eHealth stakeholders to begin this next stage in our mutual eHealth endeavours.
It has emerged at an important juncture in current and future eHealth developments in the European Union.

Brussels, March 2007

Viviane Reding
European Commissioner
Information Society and Media

About eHealth ERA and this report

The European Commission, Directorate General Information Society and Media, supports the eHealth ERA Coordination Action project to contribute to the coordination of Member States' eHealth strategy formulation and implementation as well as eHealth-related research and technology development. The project surveys and analyses eHealth roadmaps and programmes across Europe, identifies common priority issues, and develops suggestions for joint actions. All results will consecutively be made available at the eHealth ERA website (www.ehealth-era.org).

This report presents fact sheets of all European countries for which validated information about their eHealth strategies and implementation was available to the project by the end of January 2007. In countries not listed in this report, there may nevertheless be eHealth strategies and implementation activities ongoing or planned. The status of activities described is generally August 2006.

The report is the outcome of research in the context of eHealth ERA, which is implemented by empirica GmbH (co-ordinating partner, Germany), STAKES (Finland), CITTRU (Poland), ISC III (Spain), CNR (Italy) and EPSRC (United Kingdom), based on a Coordination Action contract with the European Commission.

Possible inaccuracies of information are at the responsibility of the authors.

EMPIRICA	STAKES	CNR	CITTRU	ISC	EPSRC
Gesellschaft für Kommunikations- und Technologie- forschung mbH Oxfordstr. 2, 53111 Bonn, **Germany** era@empirica.com	National Research and Development Centre for Welfare and Health POB 220 00931 Helsinki **Finland**	Consiglio Nazionale delle Ricerche Unità Sanità Elettronica Circonvallazione Nomentana 496 00162 Roma **Italy**	Jagiellonian University, Centre of Innovation, Technology Transfer and University Development ul. Czapskich 4 31-110 Kraków, **Poland**	Instituto de Salud Carlos III, Ministerio de Sanidad y Consumo Sinesio Delgado, 6 28029 Madrid **Spain**	Engineering and Physical Sciences Research Council Polaris House, North Star Avenue Swindon, SN2 1ET, **UK**
Fact sheets for **Germany, Belgium, Netherlands, Luxembourg, Switzerland**	Fact sheets for **Finland, Sweden, Denmark, Norway, Iceland, Estonia, Greece**	Fact sheets for **Italy, Romania, Bulgaria, Cyprus, Turkey**	Fact sheets for **Poland, Czech Republic, Slovakia, Hungary, Latvia, Lithuania**	Fact sheets for **Spain, Portugal, France, Austria, Malta, Slovenia**	Fact sheets for **United Kingdom (England, Nothern Ireland, Scotland, Wales), Ireland**

Table of Contents

Preface

Health systems are a fundamental part of Europe's social infrastructure. Retaining their health and, if ill, regaining their health is the number one priority for Europe's citizens. The health sector is a prime growth sector of our economies, growing faster and creating more new jobs than almost any other sector, thus strongly supporting the European Union Lisbon Strategy aims and those of its i2010 Initiative. At the same time, financing healthcare is a key cost factor for European social security systems.

eHealth, the beneficial application of ICT-enabled solutions to health and healthcare, has been recognised as a key factor to better cope with these challenges and to benefit all citizens. The European eHealth Action Plan has encouraged Union Member States "to develop a national or regional roadmap for eHealth". As this publication shows, this appeal has been met with wide support, not only across Member States but also beyond by other European countries. Activities to develop and draft national eHealth strategies were initiated or, where already under way, further fostered, roadmaps are under implementation, and as the review to follow will show, a wide variety of intriguing and path-setting activities have started all across Europe.

The material for this document was collected, reviewed and collated by the project Towards the Establishment of a European eHealth Research Area (eHealth ERA - www.ehealth-era.org). eHealth ERA is a Coordination Action that
- contributes towards greater transparency across Member States and other participating countries on eHealth strategies and implementation as well as innovation-oriented research and technology development (RTD),
- supports the development of national eHealth roadmaps,
- makes information on programmes, initiatives and activities widely available.

The material presented on the following pages was collected and assembled through the combined efforts of all partners involved in this project. It is based on information available to the team in a language they comprehend, in most instances also on input, assessments and critical reviews by national representatives or their experts. Finally, all fact sheets were edited by a professional writer to improve readability and style across all documents.

It must be noted, however, that the information in this document may be somewhat biased as a result of the limited size of the fact sheets, the consequent need for preferentially describing certain activities over others, and the views of those who helped us to validate the contents. A general note of caution is thus appropriate: the data are heterogeneous, i.e. summary reflections and comparisons have to be treated with a due degree of caution. Nonetheless, they are possible, and of value, as long as their focus is on the overall trends rather than on specific details.

This booklet reflects solely the views of its authors. Neither the European Community nor any of the Member States are liable for any use that may be made of the information contained therein. We are very grateful to the many helpers in Member State Health and other Ministries, national experts and colleagues who supported us in collecting, reviewing and validating this material. We also thank our colleagues at the European Commission, in our institutes and our partners for their critical input and review.

Karl A. Stroetmann
on behalf of the eHealth ERA project team

Towards a smart European health space

Synthesis of fact sheets on eHealth strategies and implementation in European countries

1 eHealth - a European perspective

eHealth aims to fundamentally improve healthcare in Europe. It supports Member States in realising and sustaining the common values and goals characteristic of Europe's social infrastructure. The eHealth Action plan is an important driver underlying this process.

COMMON VALUES AND GOALS OF EU HEALTH SYSTEMS

 "Working together" is the motto of the German Presidency during the first half of 2007. This holds also for the European health sector, and it reflects the commitment of Member States to not only focus on their own in-border challenges, but also to meet their citizens' requirements for more integrated healthcare provision across the Union. This is reflected in the recent request of the European Commission for public comments on its "Consultation regarding Community action on health services", triggered among others by citizens claiming their rights for healthcare provision in another Member State at the European Court of Justice in Luxembourg.

The health systems of the European Union (EU) are a "fundamental part of Europe's social infrastructure." The goals and priorities of Member States in the field of healthcare are universality, access to good quality care, equity, and solidarity, all of which constitute a set of overarching values that are shared across Europe.[1]

Despite following different approaches, all EU health systems aim at ensuring healthcare provision, which is "patient-centred and responsive to individual need[2]." Member States also aim at making the systems financially sustainable, while safeguarding common European values. An integral part of this strategy of sustainability is a shift in focus towards preventive measures; this is expected to reduce the cost burden by avoiding the occurrence of disease and associated treatment costs.

To meet these goals and challenges more effectively, eHealth is envisioned as providing a central means of enabling a more collaborative and coherent healthcare provision.

EHEALTH - A KEY ENABLER

eHealth can be defined as encompassing information and communications technologies (ICT)-enabled solutions providing benefits to health, be it at the individual or at the societal level. In recent years, technical advances and the ever increasing demands on Europe's healthcare systems have led to a growing interest in eHealth applications. The European Commission (EC) has supported technology-focused research in the eHealth field for more than 15 years.[3] In 2004, it therefore submitted to Member States and their citizens a comprehensive eHealth Action Plan.[4] The plan identified a challenging list of implementation actions to be undertaken by both the EC and the Member States; it includes a roadmap that extends until 2010. This action plan is embedded in the wider context of achieving the Lisbon Strategy, and the subsequent EU and Member State activities. The creation of a European eHealth area[5], free patient mobility[6], and empowerment of the citizen through eHealth services[7] are now core policy objectives of the Union. They are firmly embedded within the framework of the i2010 Initiative.[8] These policy and action goals were re-confirmed within the series of high-level eHealth conferences that have taken place since 2003; the latest of which was convened in Malaga, Spain, in May 2006, and the next will be held in Germany in April 2007.

1. European Council (2006): Council Conclusions on Common values and principles in European Union Health Systems. Document (2006/C 146/01), published in the Official Journal of the European Union on 22 June 2006, p. 3
2. ibid.
3. For recent projects, cf. European Commission: Information Society and Health: Linking European Policies. Luxembourg: Office for Official Publications of the EC, 2006.
4. Commission of the European Communities - COM (2004) 356: Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: e-Health - making health care better for European citizens: An action plan for a European e-Health Area, Brussels, 2004-04-30
5. ibid.
6. CEC (2004): Follow-up to the high level reflection process on patient mobility and health care developments in the European Union. COM(204) 301 final, Brussels, 20.04.2004.
7. This was the overriding topic of the 2004 European Presidency eHealth conference in Cork, Ireland, in May 2004. Cf. Wilson, P., Leitner, Ch. and Moussalli, A. (2004): Mapping the Potential of eHealth, Empowering the citizen through eHealth tools and services. Maastricht: European Institute of Public Administration.
8. European Commission: ICT for Health & i2010 - Transforming the European healthcare landscape - Towards a strategy for ICT for Health, June 2006 http://europa.eu.int/information_society/activities/health/docs/publications/ictforhealth-and-i2010-final.pdf. Luxembourg: Office for Official Publications of the European Communities, 2006.
9. eHealth Action Plan, op. cit, p. 16

These developments are expected to generate a considerable expansion in the application of healthcare ICT as countries' health systems evolve to present a full service package that focuses on health rather than care, and regards citizens as customers, rather than "just" patients.

ADDRESSING COMMON EUROPEAN CHALLENGES

In addressing common European challenges in these fields, the EU eHealth action plan has been a great initiator and facilitator. The first of several issues identified in it concerns "addressing common challenges." Here each Member State is encouraged "to develop a national or regional roadmap for eHealth."[9] As our publication shows, this 2004 appeal for national roadmaps has been met with wide support, not only across Member States but also by countries in the European Economic Area (EEA) and beyond. Activities to develop and draft national eHealth strategies and roadmaps have as a result been initiated or, where already under way, were further fostered. The vast majority of roadmaps are now being intensely discussed or already under implementation. As the review that follows will show, a wide variety of intriguing and path-setting activities are under way all across Europe.

A NOTE OF CAUTION

Nevertheless, the country fact sheets, presented in this publication and which this review and summary are based on, must be approached with some caution. As a result of the limited range and length of the fact sheets and the subsequent need for prioritisation of certain activities over others in the reports, in a few instances no comprehensive, representative overview can be provided. The direct authors of the fact sheets inevitably give their reports from different perspectives. They sometimes focus on topics which others may not regard as quite so important, or neglect activities that they do not regard as of particular interest at this point in time. For example, the national health portal implemented by NHS England, NHS Direct Online, which went live in 2000 and has been accessed over 15 million times during 2006, is not featured in its country brief. NHS Direct Online has become a matter of course in the UK. More attention is therefore paid to the eHealth solutions that are still in the process of development.

This indicates that the data are to some extent heterogeneous. Therefore, the synthesis which follows and all comparisons have to be treated with a degree of reservation. Nonetheless, comparisons are possible, and are of value, as long as their focus is on overall trends rather than on specific details.

2 Strategic perspectives of national and regional eHealth activities

Virtually all Member States feature by now eHealth strategies in dedicated documents or as part of wider eServices policies. EU-level activities have often played an initiating or supportive role for this development. More and more, eHealth is becoming a mainstream element of national health system priorities. This is underlined by the growing number of specific consultative bodies or competent authorities being established. A considerable variety of focused, concrete objectives are guiding near-term steps towards implementing policy goals.

MEMBER STATES' STRATEGIES

Compared to other sectors of European economies, in our health systems the deployment of information and communication technologies has been severely lagging behind. But Europe's healthcare policy makers are now aware of this crucial gap, and an improvement is at hand. The data from current policy papers, collected by the eHealth ERA project, show that an important step towards wider deployment of eHealth solutions has been made. During the last few years, 22 European governments have published specific documents about their intentions and priorities in the field of eHealth like eHealth strategies, roadmaps, or action plans. Five mention eHealth as a priority topic in wider national "e" strategies, usually under the umbrella of eGovernment or

Towards a smart European health space

other more comprehensive strategies in the development of the Information or Knowledge Society.

Most of the official documents that focus on eHealth have been published since 2003. However, some countries like Denmark, Finland, or Norway had already adopted initial eHealth policies during the second half of the 1990s. Others like Germany started public discussions involving a wide variety of stakeholders during the same era.

On a general level, this timeline is broadly consistent with the aim set in the European eHealth Action Plan that each Member State should have a national or regional roadmap(s) by the end of 2005.

RELATION WITH OTHER EU INITIATIVES

The role of European institutions and activities, in particular the action plan, in raising awareness in this field is evident. More than half of the fact sheets in this publication make an explicit reference to at least one initiative or policy document at EU level, and seven refer directly to the eHealth Action Plan as the basis of the developed

national strategy. The i2010 Initiative, the eEurope Action Plan, the initiative to introduce a European Health Insurance Card (EHIC) and the aim to facilitate mobility of citizens, patients and professionals, as well as the EU's legal framework, are other impetuses mentioned.

In most other instances, there are implicit indications of pursuing eHealth actions in line with EU initiatives. For example, the main driver of an eHealth strategy could be a national Electronic Health Record (EHR) system based on a common organisational and technology infrastructure. These are also core themes in the eHealth Action Plan.

HEALTH POLICY PRIORITIES SUPPORTED BY EHEALTH

eHealth is increasingly becoming an integral element of national health system objectives, or it is seen as a key enabler in wider contexts like improving the quality and efficiency of public services or speeding up the development into knowledge driven societies.

In two-thirds of the countries reviewed, the deployment of ICT-based systems is directly linked to health policy objectives. In 10 countries eHealth is a central part of the national overall health system strategy, and in 14 countries there is a more focused objective, which is usually cost containment, efficiency, and/or quality of healthcare services. In 13 countries, eHealth is one of several topics under the umbrella of ICT development or Information Society goals, or is part of the eGovernment strategy.

While national strategies for eHealth vary from country to country, the general objective is to provide increased quality of care as efficiently and effectively as possible. The development of ICT-enabled applications is viewed as extremely important. Many governments consider that ICT usage is an essential condition for improved affordability and quality of healthcare to citizens. Germany's strategy, for example, establishes an ICT infrastructure which can be built on by a wide variety of solutions without incurring unnecessary further costs.
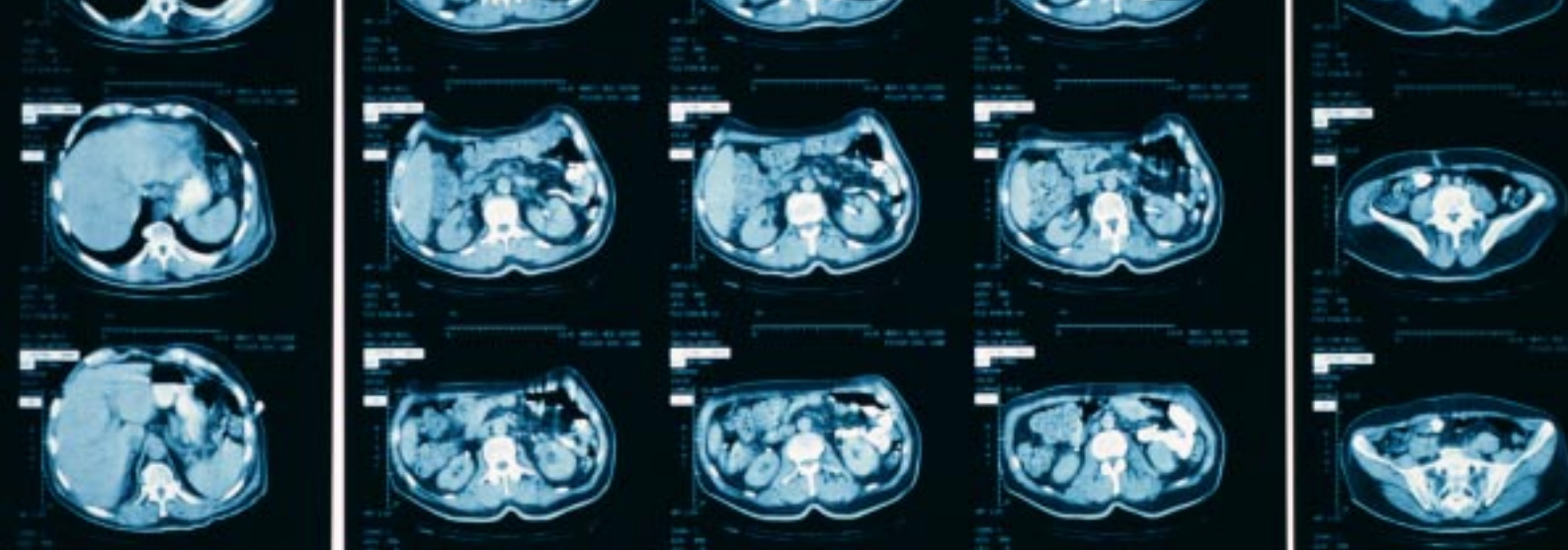
The role of the patient is clearly evident in the ICT strategies of certain countries such as Ireland, Portugal and England. Ireland, for instance, plans to build an ICT framework placing ICT in the context of healthcare reform and citizen-centred services, while England is focused on implementing an integrated IT infrastructure which will enable patients to make informed health choices and which will lead to greater efficiency. Likewise, Portugal plans to use ICT to place the citizen at the centre of the health system, while increasing the quality of services provided, increasing the efficiency of the system and reducing costs.

RESPONSIBLE BODIES AND THEIR APPROACHES TO EHEALTH DEPLOYMENT

Allocation of responsibility for eHealth strategies in EU Member States is not uniform. In many countries (e.g. Austria, France, Latvia, Lithuania, Luxembourg and Poland) responsibility lies largely with the Ministry of Health. In others (Estonia, Ireland, Italy, Hungary and the Netherlands) responsibility is more widespread. About half of the countries covered have several other bodies that are also involved in eHealth policy, like ministries or agencies responsible for new technologies, innovation and/or telecommunications. In countries with health systems that are organised federally (Austria), or with decentralised systems (Finland, Spain), or countries where several ministries (Belgium, Italy) are involved, there is a strong need for a concerted official eHealth strategy with common goals that are agreed among the different levels of responsibility.

More than a dozen countries have established specific consultative bodies or competent authorities under ministerial supervision. Their role is to develop, oversee, and monitor the country's strategic goals, and/or implement and manage eHealth infrastructure and application projects. For example, Finland and Luxembourg have special national advisory boards on eHealth. Austria and Turkey have various thematic working groups with specific tasks. Slovakia has an eHealth "think-tank" body. In Germany, the "gematik" organisation is given the respon-

sibility for nationwide eHealth activities by law. The United Kingdom is another illustrative case. Here the NHS Connecting for Health (CfH) is an agency of the Department of Health that is specifically responsible for delivering the National Programme for IT for the National Health Service in England (NPfIT), whereas the three other countries Northern Ireland, Scotland and Wales, have their own separately administered and organised health services.

Such bodies in part resolve the challenge of potentially ambiguous or distributed responsibilities for eHealth. They are also a sign of strong political commitment.

OPERATIONAL OBJECTIVES

Policies, administrative and monitoring structures are not sufficient for the effective deployment and further development of beneficial eHealth solutions. Focused goals and objectives for immediate and medium term actions are the next step towards actual introduction of ICT in health services. More than half of the fact sheets make reference to a clearly defined set of short- and medium term priorities. These priorities range from the dissemination of stand-alone applications and systems, to the building of national eHealth infrastructures by connecting existing applications and systems, to the set-up of comprehensive, national, electronic health record systems. Specific objectives include the introduction of eCards, other methods of identifying patients, and web portals for citizens and health professionals. Interoperability standards, including semantic issues as well as the legal and regulatory framework required for complex, large-scale endeavours are also high on the priority lists.

Each country concentrates on a subset of these kinds of aspirations. Indeed, across the board there is a high degree of consistency with the priorities stated in the EU eHealth Action Plan.

However, public health issues or the need for focused eHealth training and education are rarely mentioned, but for France. Another notable omission in the countrywide

Towards a smart European health space

fact sheets is attention to reimbursement and other socio-economic aspects, such as effectiveness of resource allocation, sustainability, economic efficiency or change management, all issues which fall squarely under the Member States' own authority.

The development of eHealth not only brings about new opportunities, but also new risks. In order to ensure that these risks are minimised, and that citizens are protected from the misuse of data, the legal framework provided by the European Data Protection Directives is essential. Several EU member countries have started to implement or plan to do so legislation in a number of areas, including patients' rights (e.g. Belgium), privacy (e.g. Belgium, Ireland), certification of patient records related software (e.g. Belgium), public information (e.g. Estonia), or digital signatures (e.g. the Czech Republic, Estonia, Latvia, Lithuania, Poland and England).

3   Implementation activities

After providing a broad overview of key Member States' activities, selected priority application fields and important challengers will be reviewed in this section. Among them are the planning and deployment of comprehensive eHealth infrastructure systems to serve all healthcare providers, electronic health records and patient summaries, interoperability issues, support for mobile citizens and professionals, legal topics, and finally impact assessment and evaluation.

OVERVIEW

There are not yet many large-scale national eHealth activities that are in routine operation. Most undertakings are at the stage of development, pilots or larger tests. There are five operational national health web portals for citizens, two countries with fully implemented ePrescribing systems, and three in which electronic messages (referrals, discharge letters, etc.) are exchanged between health providers on a regular basis. The three Scandinavian countries Denmark, Sweden and Norway
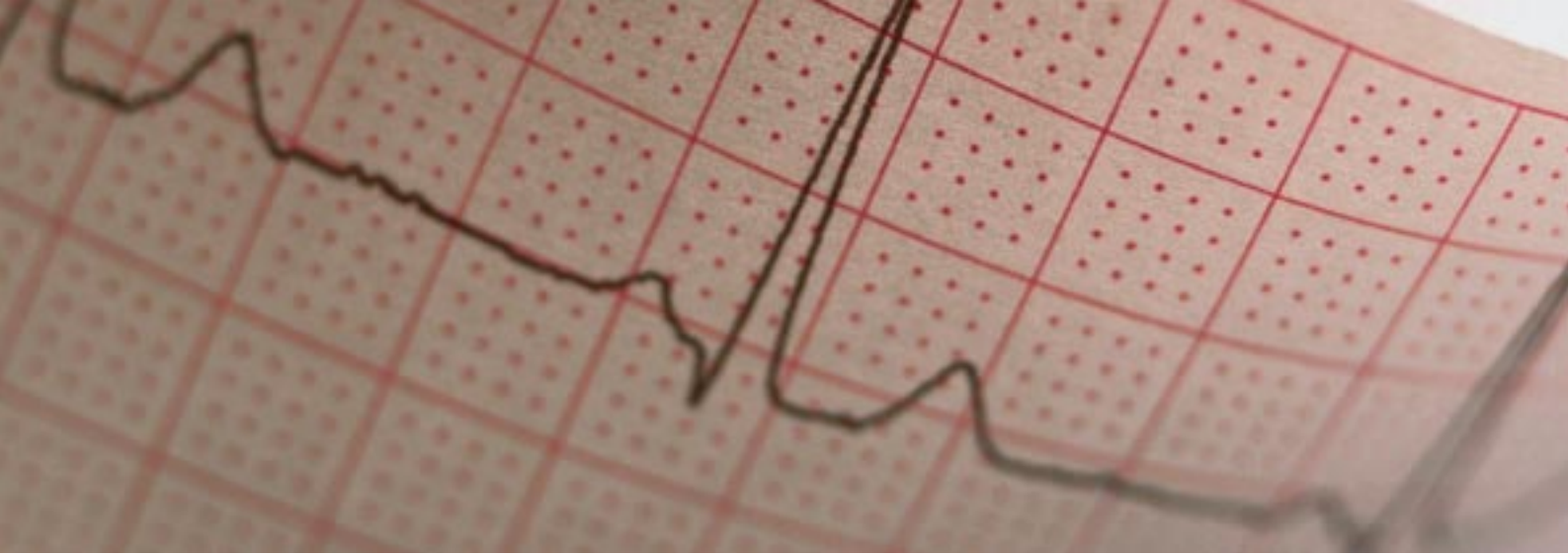
have already implemented fully operational national ICT infrastructures specifically for supporting communications in the health sector.

The majority of regional or nationwide activities highlighted in the national fact sheets are in the process of development. The first pilots are either already underway – even on a very large scale -, or at least scheduled for the next 12 to 24 months. Half of the countries are working on a national eHealth infrastructure that will connect all actors of the health sector, such as primary care, secondary care, pharmacies, and homecare. The challenge of reaching this goal means addressing a series of other issues that are identified as essential in both the eHealth Action Plan and the wider literature; these include technical and semantic interoperability, security, and personal identifiers.

There are several key projects that involve implementing national health information systems that focus around basic national Electronic Health Record systems (e.g. Austria, the Czech Republic, Denmark, Estonia, Finland, Romania, Slovakia and Spain), Electronic Patient Records or a summary thereof (e.g. Denmark, Finland, Greece and Italy). Four countries, Denmark, England, Estonia, and Greece, are working on both electronic health records and national eHealth networks at the same time.

Healthcare data networks (Denmark, Luxembourg and Portugal) and national health portals (Denmark, Finland, France, Hungary, Luxembourg and Slovakia), aimed at informing citizens and health professionals, have either been launched or are currently under development.

Other commonly found implementation activities include various forms of eCards, currently only used for administrative and insurance status validation purposes (Austria, France, Germany, Slovenia, or regions in Italy and Spain - among others) or ePrescription (e.g. England, Finland, Greece, Portugal, Spain, Sweden and Northern Ireland). Platforms for electronic messages and public health data monitoring and warehousing applica-

tions are also listed as priority activities in a handful of markets. In Ireland, for example, the national general practitioner messaging project has developed an electronic communication system between primary and secondary care.

Given the complexity and breadth of a full-scale implementation, many countries have decided to focus on specific topics in the near future, with specific timelines. In England, for instance, implementation of the New National Network (N3) began in April 2004. The Personal Demographic Service and a simple Messaging Service went live in July 2004, the ePrescription implementation started in December 2004, and the wider introduction of PACS - digital picture archiving and communication systems - followed in 2005.

Some countries are still at the stage of assessing their options. Slovakia, for example, is currently undertaking feasibility studies on various options including a national healthcare information system, different standards for insuring technical (HL7) and semantic interoperability, and health and/or insurance-based ID cards. Bulgaria is also at the stage of choosing a specific direction. Currently, eCards, electronic health records, management information systems, and web-services for citizens are all on the policy agenda.

SELECTED EHEALTH THEMES

Infrastructure

A fully operational telecommunications infrastructure is a precondition for regional or national eHealth solutions. In all countries, such basic networks exist. What is referred to explicitly in the fact sheets is a dedicated network infrastructure connecting health service providers and other relevant stakeholders like third party payers. In most cases this involves the need for broadband connections, basic technical and semantic interoperability, provision for data security, organisational infrastructures, and an appropriate legal and regulatory framework.

Scandinavian countries are among the most advanced here. Since 2002, for example, all hospitals and primary care centres in Sweden have been connected via Sjunet. It is a federated telecommunications network which also links together pharmacies and several other health care enterprises, and county councils and regional administrations. A number of eServices are also supported by Sjunet, such as ePrescription and telemedicine. Denmark and Norway use operational national eHealth infrastructures that provide messaging and other services. In Finland regional networks are being interconnected to allow for the exchange of various types of patient summaries.

Altogether, twenty three countries have some regional forerunners of national networks, are implementing, have planned, or are in the process of developing some kind of national eHealth infrastructure. To illustrate this in some detail: about half of the countries analysed are in the process of implementing a national eHealth infrastructure, connecting all actors of the health sector. In Austria, the national eCard system to verify the insurance status of citizens has gone life; in Belgium, infrastructure has been a key issue and the main efforts have focused on areas such as contributions to the establishment of technical norms and initiation of health networks to develop the concept of a shared health record. Similarly, Estonia aims to develop a nationwide framework that facilitates the exchange of health information, currently available only in local databases and information systems that are often not able to communicate with each other. A further country that plans to operate a national data exchange network is Luxembourg. Ireland, Greece, and Slovenia specify such infrastructure projects as a priority objective, and Germany is about to start testing its eCard infrastructure to validate health insurance status and data, a system which in future is expected to support more advanced applications like ePrescribing, medication and other records.

Towards a smart European health space

Electronic Health Records

Achieving a European health record is not yet an overarching goal, but collaboration on developing individual countries' health records or basic patient summaries as a first step towards more comprehensive records appears to be an aim of increasing interest to many of the Member States. Electronic health record (EHR) is a rather fuzzy term which has various definitions. A long-term objective of most European countries is a system of regional or nationwide summaries, or sometimes even full (occasionally life-long) document-based or deeply structured records for each citizen. Such a summary or record may be viewed by any of the following: either all the necessary persons concerned; only by those who need access in order to ensure good quality and safe health services; or only by those who have been directly authorised by the patient. The (eventual) development of electronic health records is evident in 25 out of the 32 countries reviewed.

Six nations report that they currently have widespread local electronic records in hospitals and other health provider organisations which, however, are not yet fully interconnected. Three countries have a national electronic health record, although they are as yet restricted in scope. Luxembourg, for example, maintains radiology records for its citizens; and in Sweden, citizens have a medication record. Germany, Sweden and Turkey are currently developing the structures of a patient summary or minimal data set. Consistent with its regions-based healthcare system, Spain is developing this work on a regional level. Only one country has a fully implemented electronic health record system of a countrywide scope – the Czech Republic. The Danish MedCom infrastructure supporting the electronic exchange of various healthcare related messages among healthcare and other service providers is being expanded towards a country-wide EHR system as well.

Interoperability

Interoperability seems not to be as high on most countries' agendas as one might expect, given that it is one of the key issues in the EU eHealth Action Plan, is a core element of current discussions among European Member States, and is also vividly present in international discussions. Only about one-third of the country fact sheets mention interoperability explicitly. With the exception of Italy, Romania and Spain, which have made technical and semantic interoperability priority issues, interoperability is perhaps seen as a challenge that needs to be addressed as part of a larger initiative. In Denmark, for example, MedCom has already developed a platform for technical standards and interoperability for eMessages – the Danish Health Data Network –, and SNOMED CT (Systematised Nomenclature of Medicine Clinical Terms) is currently being translated to provide semantic interoperability.

Patient and health professional mobility

Mobility of patients and health professionals is another central point of the eHealth Action Plan. As with interoperability, this is an issue addressed in the country fact sheets by most countries only indirectly. It is usually tackled via electronic identity and/or health cards that allow location independent access to certain services, or via web-based health records and other services that do not require access from a pre-defined location.

Again, this general result has to be viewed in context. Luxembourg and Slovenia explicitly state patient mobility as a priority topic. In particular Luxembourg, with its prolific work force that commutes across its country's borders on a daily basis, has made pan-European mobility of patients and health professionals a main strategic goal in its eHealth strategy.

Since the early 90's in various Union cross-border regions a wide variety of schemes to allow citizens to obtain healthcare in another Member State have been developed. Going beyond this, about five years ago public health insurance funds in Germany, the Netherlands and Belgium together with hospitals in tourist regions along the North Sea coast introduced a service, based on the German AOK Rheinland GesundheitsCard Europa
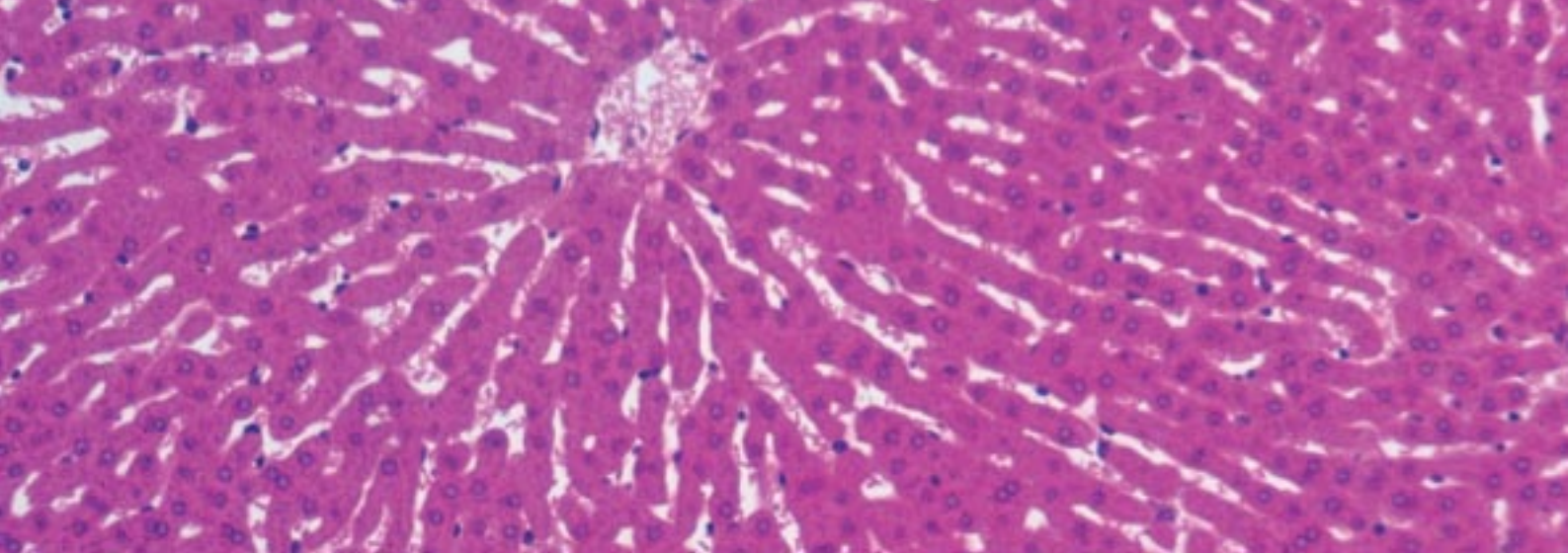
integrating the European Health Insurance Card (EHIC), that supports immediate access of travelling citizens to healthcare when in need by using a secure web-based application, which instantaneously assures participating hospitals of the insurance status of clients and guarantees reimbursement within weeks via electronic transfer of administrative data. Hundreds of thousands of citizens have already benefited from no longer requiring the E111 paper form or a separate EHIC when travelling abroad. The TEN4Health project which involves health insurance companies and hospitals in Austria, Belgium, the Czech Republic, Germany, Italy and the Netherlands will further expand such services.

Other relevant European-wide projects include NETC@RDS, which is piloting a pan-European infrastructure for health insurance validation involving by now actors in 15 Member States, and the Baltic eHealth Network project, which established a secure internet-based infrastructure and pilots the use of eRadiology and eUltrasound telemedicine services across national borders between Denmark, Norway, Sweden and hospitals in Estonia and Lithuania. However, until now, these initiatives have not been integrated into more comprehensive eHealth-based collaborations among countries. The presently for 2008 planned Large Scale Implementation Projects intended to start realising a basic European eHealth infrastructure and which are expected to involve all Member States may be viewed as the next logical step in this overall direction.

Legal and regulatory framework
Solving new legal issues is a key element in any eHealth system development. Personal medical and clinical data are for most citizens very sensitive information to be accessible only to those health or care staff whom patients fully trust. Thus, especially when planning large-scale data exchange networks with numerous health and social care actors, it is essential to ensure absolute data privacy and security. Legislation already implemented or under discussion in Member States on these matters helps in developing appropriate technical

features and provides clarity about organisational procedures. New technologies open up new opportunities, but also new risks. In order to protect citizens, regardless of whether they act as patients, carers or health professionals, the legislation that is existent in most countries may have to be reviewed and adapted to the new opportunities - and threats - created by eHealth solutions.

From the fact sheets, some general trends in Europe can be deduced. Alongside legislation or general regulations on data protection, confidentiality and telecommunications, legislation on digital signatures and medical device liability is widely spread. In addition, seven countries have specific Acts on eHealth related matters, such as medical privacy and data ownership rights (France), ePrescribing (Finland), legal framework for health ICT standards (France), or Health Telematics (Austria). Four countries, Bulgaria, Finland, Norway, and Sweden, are on the verge of reviewing their existing legislation in respect of new developments in the eHealth domain.

Evaluation and impact analysis
Six countries report on actual (Ireland and England), or planned (France, Slovenia, Slovakia, Bulgaria) assessments of the impact of investments in the eHealth domain. As such analyses will lead to an optimisation of resource allocations not only with respect to planned investments, but also for already running activities, one can expect more attention to be paid to such socio-economic and change management aspects in future.

4 Visions for the future of eHealth

The fact sheets illustrate the strong commitment of Member States to move forward and achieve the European as well as national and regional eHealth Action Plans. They appear to use eHealth as a key enabler for reforming and re-engineering healthcare delivery processes, to encourage their citizens to become appropriately empowered and responsible subjects within the health system, and to foster their national health policy

Towards a smart European health space

priorities. A wide variety of anticipated or already planned eHealth implementations are indicated. All countries are starting or continuing with the implementation of their national programmes, with the aim of achieving the objectives set out in their strategy documents. Priorities in different countries vary somewhat depending on progress in the individual areas, also reflecting structural and organisational specifities of the national health system.

In general, however, electronic health records as well as national health information (infrastructure) systems are the most common fields of current effort. They are also seen as staying at the top of the countries' priority lists (with respectively 15 and 13 references). ePrescribing will remain a core priority in the future for 12 countries, due to the prospects of implementation in the not-too-distant future. eCards, interoperability and standards, as well as the legal framework seem to be regarded more as supporting initiatives. They are mentioned explicitly between six and ten times.

Training, education of health professionals or public health solutions based on electronic health records do not seem to be of high priority. Despite being key to the wider usage of eHealth solutions, to reaping the benefits to be derived from secondary uses, and having a direct impact on the quality of health services and the general health condition of citizens, these topics are referred to only by a few countries.

5 Outlook

The above synthesis and the fact sheets contained in this volume forcefully underline the observation made by European Health Ministers in 2005 in Tromsø that "each Member State is now committed to show eHealth Leadership in developing an eHealth road map. ... In a Europe in which our citizens are increasingly mobile - whether within the borders of their own Member State or among different countries - we need to raise awareness of the pressing need for a more integrated and interoperable European health information space. The Ministers commit to taking up this challenge in a staged and structured approach over the next five-year period." In line with this commitment, eHealth-related policy initiatives as well as larger-scale national and regional implementation activities have gained considerable momentum in recent years. Union-level initiatives like the eHealth Action Plan, and the increasing exchange of experience and lessons learned among Member States have played an important role in instigating and supporting these developments.

And they will play an even more important role in future. Cooperation in bodies like the i2010 eHealth subgroup of Member State representatives, or the collaboration of Member State competent authorities and experts through the eHealth interoperability expert group will provide continued encouragement and strong support. Partially funded by the ICT Policy Support Programme of the new Competitiveness and Innovation Framework Programme, in 2008 Large Scale Implementation Projects focusing on Union-wide issues of infrastructure and interoperability, exchange of patient summaries and ePrescriptions involving all Member States will advance these activities further.

As a results, the vision of more transparent European healthcare systems, facilitated by a European eHealth space, which deliver high quality health care to all citizens independent of their location when in need of acute or other care will soon come closer to reality.

by Dr Karl A. Stroetmann,
Alexander Dobrev,
Dr. Stefan Lilischkis,
Dr. Veli N. Stroetmann

EUROPEAN UNION MEMBER STATES

Austria

Strategic perspective

The legal basis for eHealth in Austria is the Health Reform 2005 Act, including the "Health Telematics Act" which aims at the secure exchange of individual health data, and the "E-Government Act" of 2004. Promoting the use of information technologies in healthcare is one of the defined priorities in the Austrian Health Reform Act 2005. As the Austrian health system is organised federally, common goals need to be agreed between the different levels of responsibility. The main coordination body responsible for promoting the use of information technologies and for planning, financing and guidance mechanisms is the Ministry of Health.

eHealth is understood as a new set of business models and tools to improve health services by delivering the efficiency and cost-control priorities of the Austrian Health Reform Act 2005. To these purposes, the Austrian eHealth Initiative committee, officially launched in April 2005, issued their first conceptual draft National eHealth Strategy in early 2006. A public consultation process to discuss and finalise the strategy commenced in September 2006.

In accordance with the goals of the i2010 initiative of the European Commission, Austria has also set up an overall information society programme which includes eHealth as an important application field. There is a strong commitment to harmonise applications mechanisms common to eHealth and eGovernment, e.g. the Austrian focus on identity management. The Austrian Citizen Card, launched by the Federal Government in November 2000, is now deployed nationally and was recently acknowledged as one of the leading eIdentity implementations in Europe.

Implementation perspective

Several cooperative regional and bilateral eHealth solutions have been or are being implemented. However, the flagship projects are mainly focused around the "e-card" (Health Insurance Card) system. The nationwide roll-out of the "e-card" to more than 8 million insured citizens and 12,000 general practitioners was successfully completed in 2005. In this first step the "e-card" is used to verify health insurance entitlement. In the next phase, starting from 2006, the hospital information systems will be integrated and an additional range of functionalities will be offered progressively to all "e-card" users.

For example: The eMedication System previously offered on a voluntary basis is being extended to an ePrescription System for which the "e-card" system will provide the network and security infrastructure. One of the critical issues impacting patient mobility in Austria, especially for temporary visitors availing themselves of Austrian health services, is the question of health insurance reimbursement. The national "e-card" is compatible with the NETC@RDS project which aims to improve the access of mobile citizens to trans-European health services by using advanced Web-oriented applications based on a combination of IT systems and smart cards.

Austria

The most significant medium-term eHealth project is the implementation of a National Electronic Health Record (Elektronische Gesundheitsakte, ELGA). Initial steps, to be completed in 2006, include a feasibility study and the formation of the ELGA project office. It is envisaged that additional legislation, or adjustment of existing legislation, will also be necessary.

Public health service institutions, and other organisations, are using the internet as a communication channel to disseminate information on risk prevention and health promotion. For example, the Austrian Ministry of Health runs a website with a broad variety of themes related to health. In addition there are several other internet portals (many are public, some are private) which provide useful health information for the citizens and health professionals.

Future activities

The implementation of the National eHealth strategy will require activities on organisational, legal and technical level. It also requires steps to strengthen awareness among the Austrian population. Topics which present major challenges to be mastered include:

- Basic requirements for the National Electronic Health Record ELGA (agreement between the Länder on architecture, registers, indexes).
- Collaboration and achievement of required levels of interoperability and standardisation.
- Processes to ensure trust and privacy in common identification of patients and of healthcare-providers rights and responsibilities in management of the patient electronic health care record.
- Secure and trusted long-term archival strategies and capabilities.
- Use of common terminology for better regional and national monitoring of requirements, treatments and comparison of health service provision.
- Citizen focused National Health Portal (emphasis is on prevention and on citizens' participation in their own health awareness and well-being).
- Network and infrastructure for integrated health care and social services.
- Telemedicine projects for homecare and to serve remote and disadvantaged communities.

Core resources

Austrian Citizen Card:
http://www.buergerkarte.at/index_en.html , **also**
http://www.egov-goodpractice.org/download.php?PHPSESSID=
e2743e623ff205022598c05ec23500ef&fileid=787
Austrian E-Government Act:
http://www.a-sit.at/pdfs/e-govg_engl.pdf
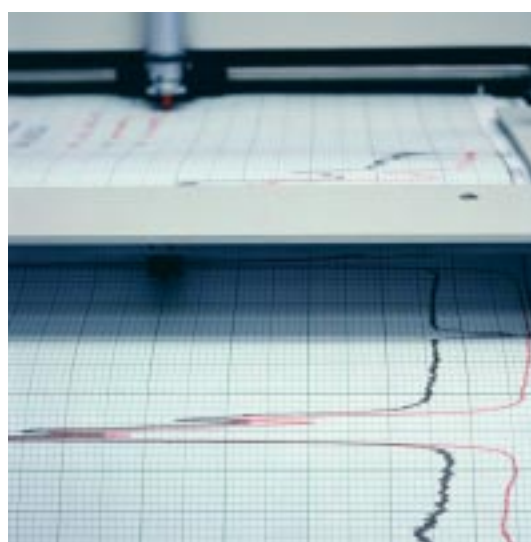**e-Card:**
http://www.chipkarte.at/.

Belgium

Strategic perspective

Belgium is a federal constitutional monarchy, where executive and legislative power is divided between the federal government, three regions (Flanders, Wallonia and Brussels) and three communities (Flemish, French and German-speaking). Communities are competent for personal matters (health, welfare), cultural matters, education and training, and co-operation between the communities and the regions. Each region and community has its own legislative and executive powers in its field of competence, and its own parliament and government to exercise these powers. Belgium's eHealth policy is therefore subject to several ministries. Due to the large number of participants involved and the institutional complexity, Belgium sees clear advantage and need for a concerted official national eHealth roadmap. This national roadmap is mainly sponsored by the Ministry of Health, and by the Secretariat of State for Informatics.

The objectives of the eHealth strategy have changed over time. Initially driven by the need for simplification and cost efficiencies of social security administration, the ICT for health agenda is now also seen as the opportunity for quality improvements. Demographic concerns are expected to be one of the main forces driving the acceleration of eHealth related programmes. Legislation exists in the area of patients' rights, privacy, data protection, medical devices liability and certification of patient record related software. A "Health Telematics" law is under discussion since 2005.

Implementation perspective

The approach to implementation is incremental with many health related issues, such as prevention and infrastructure, being dealt with at the regional level. Belgian hospitals also depend for part of their funding on the delivery of anonymised minimal electronic data sets related to hospitalisation description, including diagnosis and procedures. This provides a powerful incentive to implementation of an integrated electronic hospital medical record which are then adapted to include patient-centred functionalities and information.

The main efforts coordinated by the Ministry of Health have focused on the following aspects:

- Contributions via the "Telematics Commission" to the establishment of technical norms by recognised national experts. Since early 2000, the National Commission "Telematics Standards in relation to the Health Sector" has issued nine recommendations on the basic conditions for exchanging and sharing health information.
- Establish a certification process for minimum level of quality and interoperability of authorised ambulatory care software distributed on the Belgium market.
- Adapt or develop key reference databases and codification systems for diagnostics, treatment, care and drugs.
- Define an XML implementation for health related electronic messages, compatible with HL7: "Kmehr" (Kind Messages for Electronic Health Records).

Belgium

- Initiate health networks on a "loco-regional" basis (3 initiatives "Flow") to develop the concept of "shared health record".
- Contribute to the establishment of the national technical platform "Be-health".
- Ensure structural funding for operational research on key issues such as: patient identification, electronic signature implementation, certification of hospital information systems and telemedicine.
- Document needed adaptations in the legal context with concerned stakeholders.

Since 1998, all beneficiaries of the Belgian social security system use the SIS card. The primary objective of the later Carenet project, launched in 2004, is to check insurance entitlement rights of patients and allow – when possible – third-party payment. It aims to establish a 99% paperless communication between insurance funds and all Belgian hospitals. Certain health care providers such as pharmacists and all hospitals need to use a data access card in parallel (Security Access Module card). The SIS Card is also currently being used for other identification purposes, but is gradually being replaced by the Belgian eID card.

The Belgian citizen eID (Electronic Identity Card) was launched in production phase in September 2004 with the goal of achieving a roll-out of 1.8 million cards per year. Currently almost four million cards have been issued. Total national roll-out is scheduled to be completed in 2009. This will gradually replace other cards for general identification and authentication purposes. The card can be used as a key to access centrally stored information. This principle will be applied when the functionality of the current social security information card (SIS card) is integrated in the eID.

The Belgian eID is a smart card containing two certificates: one for authentication, and one for generating digital signatures. It contains identity data, more specifically the identity data that are also visible in printed form on the card, except for the address of the cardholder, which is only stored in electronic form.

As a major nationwide step towards interoperability, Belgium aims to introduce the Summarised Electronic health Record (Sumehr). This is now already technically possible at the ambulatory care level. The current development of health networks will naturally increase the demand for the "product". In a second phase, it is foreseen to organise a public information campaign aiming at a national roll-out.

Future activities

In 2007, two major regional networks devoted to sharing of patients records will enter their pilot phase.

The Be-Health platform will ensure interconnection of the networks and will also support needed national services such as the register of health professionals.

With basic interoperability now within reach at ambulatory care level, priority will be devoted to the development of "intelligent" applications (decision support) for general practitioners, and to the structure and codification of patient files for other practices.

ePrescription is also being studied with possible implementation tests scheduled from 2008. The legal environment is expected to be strengthened by a new law on telemedicine Reference databanks will be further enriched and made available to the industry.

The Kmehr "cookbook" will be enlarged and upgraded.

Core resources
www.health.fgov.be/
www.health.fgov.be/telematics
http://www.chu-charleroi.be/kmehr/htm/kmehr.htm
National standard "Kmehr"
(Kind Messages for Electronic Health Records)
http://www.ksz-bcss.fgov.be/fr/carteSIS/sis_home.htm
http://www.carenet.be
http://eid.belgium.be/

Bulgaria

Strategic perspective

The next step to developing a working electronic health care system in Bulgaria is the adoption of the national strategy for eHealth implementation. This horizontal policy document, issued in April 2006, is a substantial part of the National Strategy for Health of Bulgaria. Its development was based on a preliminary analysis, which covered:
- Bulgarian and world experience in implementing ICT in healthcare,
- state of the Bulgarian health system,
- trends of modern health care in advanced countries,
- social needs driving electronic services in the health care sphere.

The main goals of the electronic health care strategy are: increased quality of health care, improved qualifications of the health professionals, and application of innovative medical technologies. An action plan with detailed description of pilot eHealth projects for practical realisation of the National eHealth strategy is being developed.

Implementation perspective

Currently in Bulgaria, the health care system is not well advanced. Despite the health care reforms and the availability of good professionals in this area, dissatisfaction with the quality of delivered services continues. In addition, concerning the use of information technologies, Bulgaria has the lowest indexes of growth of the new EU countries and is behind in the process of introducing ICT in health care. Currently only a fraction of the medical service providers (some physicians, hospitals and private medical centres), some producers and distributors (of medications, medical materials and medical devices), and some pharmacies use special software. Some have more generic software products which at least partially support the needed functionalities.

The Ministry of Health owns some software products, which process information coming in from subordinate authorities. However, currently there is no centralised data store of medical information about patients, and there is no system for delivering the information needed for the Ministry analysis, planning and executive reports. The Ministry of Health intends to update these processes and thereby optimise the analysis and planning of health care resources.

Future activities

Based on an analysis of current eHealth in Bulgaria and on a study of the eHealth experiences in other countries, the following priorities for further eHealth development have been defined:
- Create a business model for the processes and relationships between the participants in the health care system.
- Where necessary, establish new legal regulations governing these healthcare processes and relationships.
- Establish computerised systems connecting parties in the health sector.

Bulgaria

- Provide specialised software for use by health care professionals.
- Introduce a more efficient and integrated information system to support decision making by managers in the health sector.
- Upgrade university level health education programmes in order to help introduce innovative technologies and working methods.

The Action plan for implementation of eHealth in Bulgaria envisages the introduction of the electronic health record and personal health record. The priority projects will be the implementation of eHealth cards, hospital information systems, personal health record, and web based applications for use by patients.

Core resources

Foundation Electronic Healthcare Bulgaria (2005):
Program for Development of Electronic Healthcare as a Part of the Contemporary Health System of the Republic of Bulgaria.
Republic of Bulgaria:
National Strategy for introduction of electronic healthcare in Bulgaria 2006 – 2009.

Cyprus

Strategic perspective

The Cyprus government strategy for eHealth aims to provide better healthcare at a lower cost. The centre of attention has also been shifted to the patients and their needs. The strategy is to establish buy-in to the necessary concepts and concrete components in order to build up a unified national health information system.

eHealth in Cyprus covers a wide range of applications. For example, such applications include hospital information systems, a national health monitoring system, computerisation of primary care services, computerisation of the forthcoming Health Insurance Scheme, introduction of a patient card, electronic health records, standardisation of medical terminology, classification and coding of diagnoses, medical procedures, causes of death, and access to external and internal data banks.

The implementation of the strategy is expected to increase the quality of health services, increase the effectiveness and efficiency of procedures and support decision making and health policy formulation, provide remote medical services (internet, telemedicine and robotics), and move steadily towards paperless and filmless hospitals through the introduction of Electronic Health Record systems and the medical smart card.

Implementation perspective

The Ministry of Health has decided to proceed with the implementation of a Health Care Information Support (HCIS) System in all government hospitals, outpatient departments and rural health centres. To this end, in 2004 the Ministry and the Department of Information Technology Services (DITS), jointly issued a Request for Proposal (RFP) for a turnkey ready-made application software which would provide an Integrated Health Care Information System. The vendor selection procedure was completed two years later, in 2006.

The following set of integrated applications and modules will be provided to support the activities of the hospitals:

- patient administration / Electronic Health Record,
- coding of diseases, operations, procedures,
- hospital order entry and management system,
- clinical laboratory / histopathology,
- blood bank,
- radiology / Picture Archiving and Communication Systems (PACS),
- doctor's pharmacy prescription,
- billing,
- personnel management,
- stores / inventory control,
- Health Smart Card.

The implementation of a PACS system has already begun at the New Nicosia General Hospital.

A further invitation to tender for consulting services, equipment and software development for a national health monitoring system was launched in August 2005. The project will develop an expandable, flexible compre-

Cyprus

hensive data warehouse to produce the required range of health indicators. The Health Monitoring Project is scheduled to be completed by the end of September 2007.

Future activities

The HCIS tender contractual processes are at their final stages and implementation is scheduled to begin with the computerisation of two flagship hospitals: the New Nicosia General Hospital and the Famagusta General Hospital.

The Ministry of Health then intends to roll-out the HCIS to all hospitals, and to medical centres under the public sector, by 2010. Private doctors and clinics, where appropriate, will be given access to the hospital patient record. The recently constructed high-tech New Nicosia General Hospital will be the central node of the health institutions of Cyprus.

Core resources

Vision of the Ministry of Health regarding information technology:
http://www.moh.gov.cy/moh/moh.nsf/computer_en/computer_en?OpenDocument/

Czech Republic

Strategic perspective

The Ministry of Informatics, and the Ministry of Health have the greatest impact on policies related to eHealth development in the Czech Republic. In 2002, the Ministry of Informatics issued the "National Action Plan eEurope+ Czech Republic" which includes a subsection on on-line Health (Zdravotnictvi on-line) under the third objective "The Support of Internet Use". That document stresses the government's intent to actively promote deployment of the latest ICT, and their view that ICT use is an essential condition for improved affordability and quality of health care to citizens. The key targets and outputs for this area assigned to the competencies of the Ministry of Health cover registers, telemedicine and medical documentation. The targets were initially scheduled to be achieved by 2005.

Implementation perspective

The intentions of the Czech government as expressed in the strategic document "National Action Plan eEurope+ Czech Republic" are to:
- gradually replace the existing health insurance cards with smart cards, compatible with EU standards, and according to EU schedules;
- by the end of 2005, roll out a system providing public health information;
- by the end of 2006, build up an information network connecting points of care in the Czech Republic to other points in the EU, thereby enabling the sharing of public health data and coordination of activities in the event of life and health emergencies;
- ensure activity from the insurance companies to establish the electronic portal for reimbursement and help to make health care professionals become more capable and more extensive in their use of ICT.

Many activities supporting these objectives are currently underway. For instance, the electronic health record system was developed and provided by IZIP Inc. to insurees and health care institutions. It is currently the most visible eHealth-related activity in the Czech Republic. The system operates nationwide and covers not only the provision of electronic health records but also includes functions such as ePrescription, eMessages and eAlarming. It is also planned that in the near future it will become a valuable source of statistical data for managers, insurance companies and government authorities.

National legislation in the Czech Republic addresses the following eHealth-related issues: data protection, telecommunications (with regard to data protection and confidentiality), and authorised digital signatures. The latter enables legal validity of electronic documentation as well as provision of ePrescription services and medical professional registries. The legislation enacted in the Czech Republic with impact on the EU-level harmonisation process includes coverage of the community directives on data protection, on a Community framework for electronic signatures, on privacy and electronic communication, and on electronic commerce.

Czech Republic

Future activities

Continuation and extension of current eHealth activities including educational and promotional actions are planned. Future eHealth domain activities conducted in the Czech Republic will address the issues of fostering wider usage of ICT in all spheres of the health care service system and ensuring more significant integration of ICT and eHealth applications as important and necessary tools for improving the quality of health care. Further priority areas include development of legislation which will enable greater harmonisation with European requirements and standards.

Core resources

The Ministry of Informatics
http:// http://www.micr.cz/
The Ministry of Health
http:// http://www.mzcr.cz/
IZIP
http://www.izip.eu

Denmark

Strategic perspective

The Ministry of Health launched its first strategy for the development of Electronic Patient Records (EPRs) in 1996, when through a number of decentralised, regional pilots the need for standards and common terminology was identified. The National Strategy for Information Technology in Hospitals followed in 1999 with the main objective of establishing EPRs as the core of IT systems in hospitals.

The latest strategy, the National Strategy for Information Technology in the Health Care System (2003 – 2007), was published in 2003. Its core principle is that "shared information is the foundation for seamless care and patient involvement" and its main strategic targets are:
- high professional quality of care,
- straight answers,
- shorter waiting time,
- high level of user satisfaction,
- better information about service and quality,
- efficient use of resources,
- freedom of choice.

Major structural reform of the healthcare sector takes effect from January 2007. The existing 15 Counties (14 Counties plus Copenhagen Region) will then be consolidated into five regions, and the number of municipalities will be reduced, from the current 271 to 99.

Implementation perspective

The responsibility for implementation of each of the 29 initiatives in the strategy is shared per initiative among the following organisations: Ministry of Interior and Health, National Board of Health, Association of County Councils and Copenhagen Hospital Corporation, MedCom and the Danish Standards Association.

EHR strategy: Most of the initiatives in the first period (2003 – 2005) related to the development and implemen-

tation of electronic health records (EHRs). The focus was on initiatives aiming at the development of, e.g., common standards, concepts, and classifications as well as on initiatives ensuring good integration between EHRs and the other IT systems available in the health care service. Based on standards elaborated by the National Board of Health, the "Basic Structure for Electronic Health Records" (BEHR) presents a conceptual model for clinical process and a reference information model specifying the requirements on the ICT system to ensure search and exchange of data. BEHR aims to create the foundation for a nationally coordinated EHR adoption in the hospital sector and be the take-off point for cross-sectorial use of information in health records.

To ensure consistent clinical terminology, the National Board of Health is translating SNOMED-CT into Danish and developing synonyms for commonly used local terms (SUNDTERMS - Healthy terms).

In addition, the EHR Clinical Content Project launched in the Capital Region in May 2004 is intended to standardise multi-professional shared clinical content in hospitals on the basis of current processes – rather than

Denmark

evidence based medicine guidelines. Working groups have already been established for more than ten specialties, from a target of almost 40 specialities.

EHR IMPLEMENTATION:
THE USE OF ELECTRONIC PATIENT

Records in primary care is well established. Almost all general practitioners (GPs) offices are computerised. The 2003 fiscal agreement between the government and the county hospital owners required that Electronic Health Records based on shared standards be implemented in all Danish hospitals by the end of 2005. The five new hospital regions (2007) have adopted the principle of "one patient – one HER" within each region and are building their EHR on the BEHR specification, while sharing basic IT architectural principles.

INFRASTRUCTURE
THE DANISH HEALTHCARE DATA NETWORK:

Counties, local authorities and other organisations have secure intranets. At first, the local networks comprised the "logical" Danish healthcare data network. This was made possible by agreeing on uniform technology and communication standards, thereby avoiding problems with communication across the regions. Now, these networks are linked by the Danish Healthcare Data Network (Internet based) through VPN connections, via a cooperative agreement with MedCom. The penetration and rates of use of the Healthcare Data Network is as follows: GPs 97%, specialists (full time) 74%, pharmacies and hospitals 100%, local authorities 44%. The types of eHealth services delivered through the network currently include:

- referrals and discharge summaries,
- prescriptions,
- teleradiology – teledermatology services,
- laboratory results look-up through the National Health Portal.

NATIONAL HEALTH PORTAL:

The public National Health Portal, Sundhed.dk, was launched in December 2003. It provides a single access point to Danish healthcare services for both citizens and professionals. Using their digital signature, citizens can avail of a variety of services such as: book GP appointments, order medications and renew prescriptions, review their medication data and communicate with healthcare authorities. In addition, the portal offers, e.g., directory services, general and disease-specific health information, access to national guidelines, basic information regarding hospitalisations. In the context of providing care and by using their special security certificates, healthcare professionals can access patient data and laboratory results, and utilise various other resources (e.g. guidelines and clinical pathways).

ELECTRONIC DATA INTERCHANGE (EDI) – STANDARDISATION:

More than 3 million EDI documents are sent per month, which represents 80% of all communications in the primary healthcare sector. MedCom developed EDI standards in 1996 based on the EDIFACT syntax. During MedCom VI, an XML version of these standards were developed for hospital communications. MedCom also tests and approves computer systems for the reception and dispatch of EDIFACT and XML documents, as well as XML web service solutions.

Future activities

EPRESCRIPTION - MEDICINE PROFILE:

The Medicine Profile is an electronic overview of the purchase of prescription medications in Denmark. All purchases are automatically registered in an individual, personal medical profile for every citizen. This is achieved by substituting earlier EDI-based prescription messaging with XML messages sent directly to the National Health Portal. The personal profile can be accessed by the citizen, the treating physician and by the pharmacies authorised by the patient. The project aims to improve quality of drug therapy, while giving a valuable overview of patient compliance. A national prescription server has also been built, which will enable patients to fill their prescriptions in any pharmacy.

Denmark

SUP MODERNISATION WEB-EPR PROJECT:
The purpose is to make standardised extracts of registered patient data available across county boundaries through look-up, rather than actual sending of the data, e.g. as required when a patient receives treatment in a county other than the one where he or she resides. Communication takes place in encrypted form on the MedCom network, either via local user control or through the National Health Portal. The modernisation of SUP to the WEB-EPR solution will expand communication beyond hospitals, and enable citizens, GPs, specialists and the home care services of local authorities to access selected EPR data.

MULTI-NATIONAL EHEALTH COOPERATION:
Expansion to cross-border networks, as demonstrated for example in the Baltic eHealth project, is a future target. The objective of Baltic eHealth, which is coordinated by the Danish Centre for Health Telematics, is to facilitate the use of telemedicine across national borders in the Baltic Sea Region. Having established a secure Internet-based infrastructure between Denmark, Norway, Sweden and hospitals in Estonia and Lithuania, the next step will be to further consolidate the infrastructure and increase the number and type of services available through the network.

Core resources

National IT strategy 2003-2007 for the Danish Health Care Service. National Board of Health - The Ministry of the Interior and Health, May 2003. Available online at:
http://www.sst.dk/publ/Publ2004/National_IT_strategy.pdf
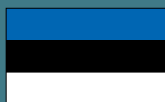**Danish National Board of Health:**
http://www.sst.dk/default.aspx?lang=en
MedCom - The Danish Healthcare Data Network.
http://www.medcom.dk/wm109991
Sundhed.dk - The Danish National Health Portal.
http://www.sundhed.dk

Estonia

Strategic perspective

Estonia has a well developed eGovernment Service infrastructure that is also being used in the eHealth domain, for example when establishing the connection between the health services and the patient. In particular, 80% of the 15 – 75 year old population have an electronic identity card. The card has the ability to handle the functions of authentication, signature and encryption which gives it a central role in data protection and security risk management in the health service arena.

Since 2000, the eHealth strategy of the Estonian Ministry of Social Affairs (MoSA) is based on three pillars:
· establishment of a nationwide integrated electronic health record system, also known as the "Electronic Health Record Project of Estonia (2005 – 2008)",
· a strong focus on standardisation and in particular on interoperability, and
· the use of the existing IT infrastructure.

The strategy foresees a comprehensive central register of the health information for all 1.35 million Estonians from birth to death. The register is intended to facilitate the exchange of all types of health data between health care providers. It is also meant to support centralised healthcare management and strategic planning through better quality and accuracy of the necessary data for organising healthcare. Responsibility for implementation has been entrusted to the private non-profit Estonian eHealth Foundation. It was set up by the hospitals and professional associations in October 2005 following an initiative of the Estonian Ministry of Social Affairs. The main goals of this foundation are the development and governance of nationwide eHealth projects, and the coordination of the unification of Estonian health care provider information systems.

The main drivers of eHealth development in Estonia are central public administration and public-private partnership (PPP). Several legal and other requirements have spurred implementation of administrative systems.

Foremost are
a) the regulation set by MoSA in 2000, which demands computer and internet connection in all primary care practices, and
b) the mandatory requirement (2001) of the previously voluntary recommendation (1996/1997) that all claims for re-imbursement sent to the Estonian Health Insurance Fund (EHIF) must be in electronic format.

Implementation perspective

THE ELECTRONIC HEALTH RECORD PROJECT (EHR)
The digital health record project is currently (2006) under development. It consists of one large Electronic Health Record (EHR) project and three smaller projects connected to the EHR, notably digital images storage and access, fixing appointments online and digital prescriptions. The project implementation period is 2005 – 2008. Booking, prescriptions and images are scheduled to be

Estonia

operational by end of 2007 and the full EHR by end 2008. A patients' health history is recorded and made securely and easily available. The central database of EHR includes three types of data:

❶ Patient's primary information. This includes contact details, insurance information, allergies, and important drug information.

❷ A link directory that points to other sources which include stored medical data about the patient, for example in the IT systems of hospitals and GPs.

❸ Centrally stored medical records. Vaccinations are also recorded in the EHR-system.

In case of referrals, the general practitioner can use the EHR system to send information to the specialist, and the system facilitates finding the right specialist.

TERVISEPANK ("HEALTH BANK", HB)

By 2003, 99% of family doctors (FD) in Estonia were using computers and 88% had broadband internet access. Most of these systems were mainly dedicated to administrative routines. Few had any link to a clinical system or usage. To address this gap, the Estonian Society of Family Doctors (ESFD) initiated the development of a centralised internet solution. It can satisfy financial and administrative needs, and even more importantly can help manage clinical information in primary care which is estimated to absorb about 30% of total workload. Thus in the second half of 2005 a patient information and practice management system for family physicians called Tervisepank ("Health bank" HB) was launched. This is a centralised web application capable of serving all family doctors and insured people (1.25 million) in Estonia.

Future activities

Estonia's eHealth strategy is ambitious. A system of medical information that registers all the health data of every citizen from birth to death is without international precedent. As it evolves into maturity the Electronic Health Record Project initiative will bring together or provide access to the patient clinical data in systems in all medical centres. This includes hospitals, general practitioners, emergency care institutions and pharmacies, as well as the information system of the Health Insurance Fund, and other registers and databases.

The Electronic Health Record Project initiative will also support the provision and usage of eHealth services for and by the public in Estonia. All patients will be able to securely access and review their medical data and make it available to the health care professionals they are dealing with. This also includes the ability to – via the Internet – obtain appointments online, submit prescription renewal requests, and exchange test results such as blood pressure readings.

The realisation of the digital health record project requires not just implementation of advanced information technology across a deeply complex system. It is widely recognised that significant efforts will be required in re-organising existing organisational and service delivery structures and in establishing an innovation friendly ethos.

Core resources

Internet based patient information and practice management system for primary care, by Ain Aaviksoo, PRAXIS Centre for Policy Studies:
http://www.ehealthconference2006.org/index.php?option=com_content&task=view&id=110&Itemid=178&lang=EN
eHealth in Estonia (May, 2006) by Kristiina Rebane, Ministry of Social Affairs of Estonia:
www.ehealthconference2006.org/pdf/REBANE.pdf
Health Policy Developments Issue 6: Focus on Continuity in Care, Evaluation Techniques, IT for Health / edited by Reinhard Busse, Annette Zentner and Sophia Schlette. Bertelsmann Stiftung, Gütersloh, 2006.
The Ministry of Social Affairs (MOSA), Estonia Web Site:
http://www.sm.ee/eng/pages/index.html
ID Card Issuing Statistics:
http://www.id.ee/pages.php/03030102

Finland

Strategic perspective

The development and implementation of eHealth solutions in Finland is heavily influenced by the strongly decentralised Finnish health care system — the 430 municipalities are each responsible for providing and developing health services for their residents. Moreover, specialised care (secondary and tertiary care) is provided in public hospitals, of which five are university hospitals, 15 central hospitals and around 40 other smaller specialised hospitals. In addition, public health provision is supplemented by private health care services.

The Ministry of Social Affairs and Health established its first Strategy for the Utilisation of Information and Communication Technologies in Welfare and Health in May 1996, as part of Information Society policies aimed at facilitating information transfer between organisations. Already then, the strategy was built around the principle of citizen-centred, seamless service structures. Among the main targets were the horizontal integration of services (social, primary and secondary care) and the development of shared, coordinated services delivered closer to home.

Citizens and patients were envisioned as informed and participative agents in the healthcare delivery process. To realise this vision the use of ICT was seen as essential; and partnership between service providers and industry was encouraged. In addition, a new contract-based model, paving the way towards regional level service provision, was introduced between municipalities and private service providers.

The strategy was updated in 1998, placing specific emphasis on several issues, including: the adoption of digital patient and client records in all levels of healthcare and social services, combined with nationwide interoperability between distributed legacy systems; support of high level security and privacy protection, allowing citizens access to their patient records via the Internet, as well as maintenance of a personal digital health and welfare record; and improved management of service chains.

In 2002, as part of the National Program for Securing the Future of Health Care, the government decided that "a national electronic patient record" should be introduced by the end of 2007. The strategy for the national Electronic Health Record (HER) was published in January 2004. In addition, the national project to develop the use of ICT in social services started in 2003. In 2005, a plan to build a national EHR archive was added to the national policies under the umbrella of Prime Minister Matti Vanhanen´s information society program.

The Finnish eHealth roadmap is currently in preparation and is expected to be finalised in 2006. The starting point has been the implementation of the EU eHealth Action Plan.

Finland

Implementation perspective

Infrastructure: Health information is transferred using broadband networks managed by commercial tele-operators. There is no specific eHealth network. Instead secure commercial communication channels (e.g. Virtual Private Network (VPN) channel, Secure Internet Protocol (IP) Channel) are typically rented for healthcare purposes. Hospital regions and many municipalities have also implemented closed intranets, mainly based on VPN-technology. Secondary care hospital intranets are connected together either via VPN/ATM channel or via the internet. The National Insurance Agency, KELA has its own nationwide ATM-network. There are also two VPN-based pharmacy networks. Private service providers have institutional (virtual) sub-networks, one of which is nationwide (Mehiläinen) and the rest are smaller regional networks. All service providers are connected to the internet.

HEALTH INFORMATION FLOW

On the national level there is electronic communication between KELA and pharmacies for drug reimbursement, between KELA and service providers for ordering of drugs and materials and between service providers and the National Research and Development Centre for Welfare and Health (STAKES) for national statistical data collection.

Regional information transfer is based on regional directory services and interoperable systems, which are already working in six of the 21 hospital regions. In the eastern part of the country a common information system (KAAPO-system) is used as the basis of regional information transfer, while the TELLAPPI network covers the whole Northern part of Finland. Eleven of the 21 hospital regions are using a common online certification service. The most commonly used communication standards in Finland are derived from the HL7 family (at present the HL7 CDA R2.x family standards). EDIFACT is used in some applications but newer applications are using XML. For security purposes messages are placed in a SOAP-envelope.

eHealth services: eServices used on a regular basis include:
- Regional level telemedicine services;
- transfer of images, eReferrals, laboratory results and care summaries between primary and secondary care;
- eConsultation;
- billing and eBooking.

LEGISLATION

Temporary legislation on implementing seamless service chains was introduced in 2000. Since then a Ministerial Work Group (WG) prepared permanent legislation and another Ministerial WG has defined the national ICT architecture and supporting services. These WGs finalised this work in 2005, and have since steered the respective implementation processes.

ELECTRONIC HEALTH RECORD (EHR)

96% of all primary care health centres use EHRs as the main method for medical documentation, and almost all (20 of the 21) hospital districts and 89% of the private sector service providers currently use an EHR system at least to some extent. The national requirements, such as standards (CDA R2, Dicom, ISO/OID), content and structure of EHRs, as well as data security and data safety guidelines will now be implemented in existing EHR systems.

Semantic interoperability is included as a target in the EHR project. The interoperable core data set is presently in the early implementation phase. Headings of the EHR and its metadata will be harmonised as well as the main data types. STAKES maintains the code server where all relevant codes and classifications are stored and from which they can also be downloaded electronically.

ePRESCRIPTION

A national pilot was launched in 2002. The piloting of the system ran in 2004–2006. At present, permanent ePrescription legislation is under preparation. The system is based on a national ePrescription database hosted by KELA, strong authentication and a smart ID-card for professionals with eSignature systems and SSL-secured messages from health care providers and pharmacies to the database.

Finland

HEALTH PORTALS

A national health portal for citizens is being constructed. The prototype of the portal is shown at a public website (www.tervesuomi.fi). The portal will be finalised during 2007. There are also several municipal and hospital portals with general information for citizens as well as health problem/disease specific portals maintained by patient associations, or other third sector organisations. The major portal for health professionals is Terveysportti (www.terveysportti.fi), maintained by the Finnish Medical Society Duodecim. A decision support system for professionals has been built and is being offered as part of the Terveysportti services.

Future activities

For reasons of practicality and economy, the information management system in Finland should at least in part be organised at the national, rather than the regional level. At the heart of the national Finnish ICT infrastructure for social and health care will be a national digital archive for patient documents. In addition, there will be one logical connectivity centre for eHealth communication. Exchanging data between organisations will be conducted on a national basis and not regionally. The service will be maintained by the Social Insurance Institution (KELA). The legislation which obliges all health organisations to join the national IT architecture for health will come into force at the beginning of 2007, and the system should be built by the end of 2011.

There will be a national PKI system for health care professionals. The system will be administered by the National Authority for Medico-legal Affairs.

A common standardised secure infrastructure will offer new opportunities to develop processes and roll out new digital services. For instance, citizens will be better able to access their own data and monitor its use through their PKI-based Citizen Certificate in their Smart ID-cards. This card is managed by the Population Register Centre (www.

fineid.fi) and already over 60,000 have been distributed. Rapid diffusion of ePrescription is anticipated after the legislation is issued in the beginning of 2007. Work on technical and semantic interoperability will continue, as well as development and diffusion of eHealth applications and services.

Under the upcoming legislation, the Ministry of Social Affairs and Health will have a stronger role in steering eHealth Activities in close cooperation with other national authorities such as STAKES, the Social Insurance Institution and the National Authority for Medico-legal Affairs. There will also be a permanent national advisory board for eHealth activities. The members of that board, representing different interest groups, will be nominated by the government.

Core resources

Health Services in Finland.
Finnish Ministry of Health and Social Affairs.
http://www.stm.fi/Resource.phx/eng/subjt/healt/hserv/index.htx
Healthcare Policy Reference List.
Ministry of Social Affairs and Health.
http://www.stm.fi/Resource.phx/eng/subjt/healt/index.htx
Strategy for the Utilization of ICT in Welfare and Health.
Tietotekniikan Hyödyntämisstrategia (In Finnish).
Ministry of Social Affairs and Health.
http://pre20031103.stm.fi/suomi/tao/julkaisut/hyodstra/tteknsis.htm
http://www.tietoyhteiskuntaohjelma.fi/tietoyhteiskuntaneuvosto/jaostot/fi_FI/sosiaali-ja_terveydenhuolto/
Doupi P, Ruotsalainen P, eHealth in Finland:
present status and future trends. International Journal of Circumpolar Health 63:4 2004, p.322-327.
http://ijch.oulu.fi/issues/634/634_Doupi.pdf
Ministry of Social Affairs and Health: eHealth Roadmap - Finland.
http://www.stm.fi/Resource.phx/publishing/store/2007/02/pr1172737292558/passthru.pdf

France

Strategic perspective

In France, during the past decade, the importance of Health Information Systems and eHealth has been expressed in a series of laws in the field of public health and social security. Under the responsibility of the Minister of Health, the development of eHealth initiatives continues to be a major objective for the French government.

OFFICIAL REPORTS

Recent official reports concerning aspects of eHealth development in France include:

- A report by the Parliamentary Office for the Evaluation of Scientific and Technologic Choices (OPECST), entitled "New Information Technologies and Healthcare Systems" (June 2004).
- A report by Bérengère Poletti, Member of the Parliament (projet de loi de financement de la sécurité sociale, 2005).
- Reports, mainly focused on the governance issues, from the "Cour des Comptes" and the "Inspection Générale des Affaires Sociales" (IGAS).

The recommendations of the OPECST report which focused mainly on hospitals include, among others: an outline of eHealth funding for hospitals; creation of a specialisation in eHealth and associated specific training by medical faculties; primary care providers charged with public duties should have online links to a hospital; potential creation of a regional eHealth coordination structure under the responsibility of the director of the Regional Agency for Hospitalisation, on behalf of the Ministry of Health, in partnership with local elected authorities; and generalised eHealth in all penitentiary settings. The new global plan for the hospital sector was recently announced by the Minister of Health under the "Hospital 2012" plan.

Four major objectives have been outlined for eHealth in France:

- Contribute to national public health objectives: improve organisation and coordination of care.
- Contribute to national planning objectives: facilitate the access to proximity healthcare, in particular in rural areas.
- Contribute to the training of healthcare professionals.
- Ameliorate the problems arising from demographic change (for citizens, patients and health care professionals).

STRATEGIC PLANS

The national strategy is mostly targeted at the optimisation and reengineering of the healthcare system. The underlying global objectives are to achieve improvements in the quality and the continuity of care for each citizen. On this basis financial resources have been devoted to the development of eHealth through a diverse range of national plans, among which the most recent include:

- Périn@t (perinatal plan)
- e-s@nte 2000, 2001, 2002
- FMESPP (Fund for the Modernisation of Public and Private Hospitals)
- CPER (State-Region Planning Contracts)
- CIADT (Inter-ministerial Committee for Territory Planning)
- FAQSV (Fund for Primary Care Quality Improvement)
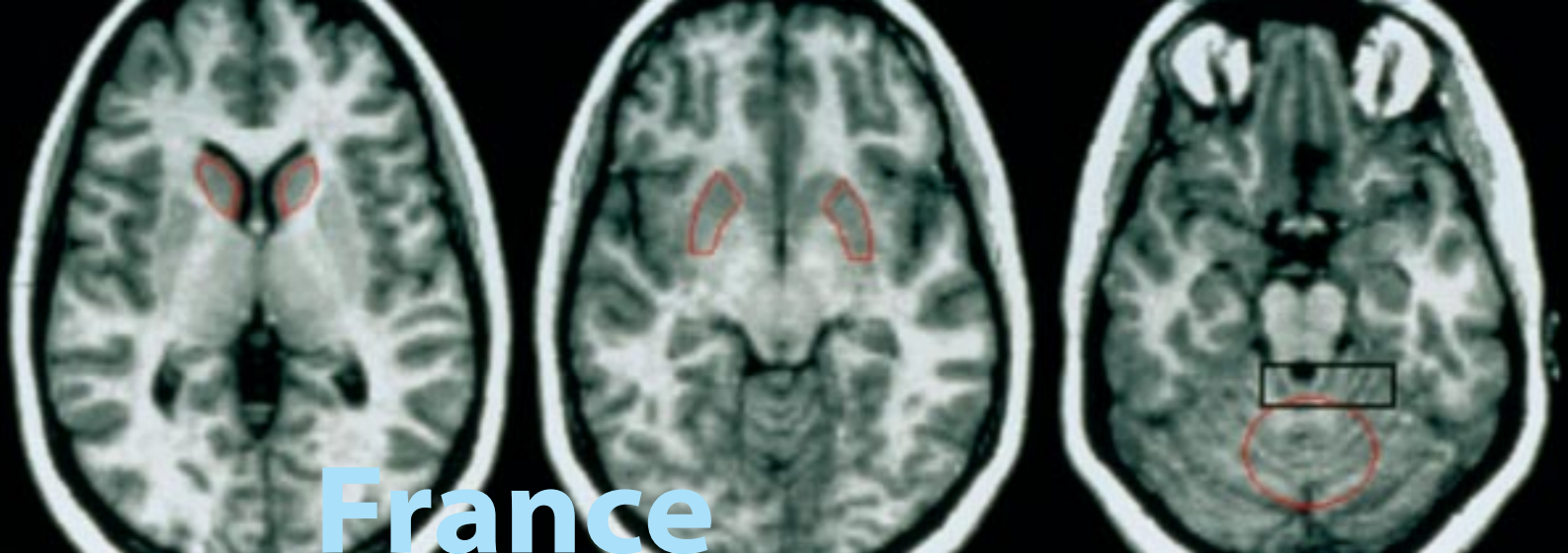
France

ENABLING LEGISLATION

Legislation exists in the area of data protection, telemedicine, eHealth service provision and Health-IT product liability, as well as Electronic Health Record. The legislation of 1996, 2000, 2002, 2004, 2006 and 2007 concerning the Public Health and the Social Security sector is of particular relevance.

The main legal framework for Health Information comprises:

❶ The Commission Nationale Informatique et Libertés (CNIL) law of January 1978, with the European Legislation (24 Oct 1995), which prohibits data processing without consent of the person, except for data absolutely necessary to the health professionals in charge of treating the person concerned, or those related to health service management or required by people exercising under professional secrecy.

❷ The "Ordonnances Juppé" of April 1996 organising the secured electronic infrastructure for the health system, based on authentication of the insured persons and the health professionals as well as the usage of a secured network based on internet standards to exchange electronic information.

❸ The Medical Privacy Act (4 February 2002) which details the ownership rights of the patient to his or her data, whereby transmission of personal information is authorised only between health professionals treating the same patient, and only with patient's prior consent (article L1110-4).

The legal framework for health ICT standards is the Healthcare Insurance Act of August 2004 (Loi n°2004/810 sur l'Assurance Maladie), Articles 32, 33, 34, 67 related to telemedicine. This law also provides for the creation of the Dossier Médical Personnel (DMP, Personal Medical Record), on behalf of the patient, in order to facilitate the continuity of care. A dedicated structure, the GIP (Public Interest Group) DMP, was created in April 2005 to design, supervise and organise the deployment of the DMP. Furthermore, the Dossier Pharmaceutique (prescription dossier), was created by law in early 2007 in connection with the DMP.

Implementation:
realisation and perspectives

eHealth has been implemented at both local and regional levels. A national eHealth virtual community has also been realised through the national mapping of all eHealth initiatives. Relevant well-known practical eHealth implementations include:

- The CPS (Carte de Professionnel de Santé - Health Professional Card) is a microprocessor card managed by the GIP CPS, a dedicated structure created in 1993, and reinforced on the basis of the Juppé's 1996 law. The CPS functionalities include identification, authentication and electronic signature of health professionals.

- The SESAM-Vitale system uses a microprocessor card (carte Vitale) which contains health insurance data for the insured and their beneficiaries. It replaces paper forms by electronic reimbursement claims (Feuilles de Soins Électroniques, FSE) controlled by the simultaneous usage of the health professional and insured person's cards. In the near future, the Vitale card will be replaced by a new one, the Vitale 2.

- EU NETC@RDS Project, coordinated by SESAM-Vitale Economic Interest Grouping, aims at improving the access of mobile citizens to trans-European health services through a cross-insurance fund (contractual financial) verification of the personal social insurance rights and acceptance of the costs incurred for the healthcare provided.

- The official Health Web Portal in France has been developed under the auspices of the Health General Directorate of the Ministry and aims at promoting information from public agencies working on public health topics. Other important health portals were launched, such as the Plan Cancer, which is the public information website of the national health priority on cancer prevention, as well as dedicated information and recommendations about the quality of the health web sites and services.

- The Mandatory Insurance Organisations are continuing to develop dedicated applications for the

France

Healthcare professionals, for example an application which allows medical doctors to securely access information about the previously reimbursed actions or prescribed drugs concerning their patients.

- Several outstanding regional applications and platforms, in the fields of telematics, telehealth, and telemedicine are already in use in different regions, as well as specialised dossiers like the DCC (Dossier Communiquant Cancer). The DMP project (Dossier Médical Personnel - personal medical record), one of the most important aspects of the 2004 law, is now presenting a real opportunity to organise the liaison and the articulation at the national level between the local-regional projects and the national one, by building on accepted "reference practices" for security and interoperability based on international standards, for the benefit of the patient.
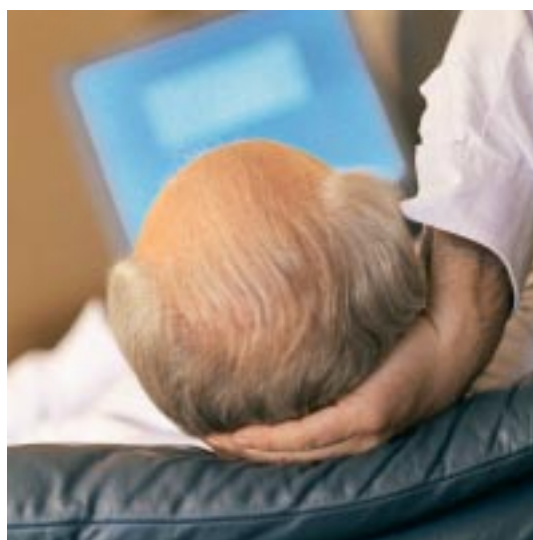
Future activities

Pursuing the development of eHealth initiatives is a major objective of the French government. The eHealth developments envisioned over the next few years include:

- Further development in the use of current eHealth applications, and the emergence of more new applications consistent with the eHealth information system strategic global plan.
- The adoption of validated standards for the implementation of eHealth projects.
- Agreement on the definition of clinical, economic and organisational evaluation criteria.
- The design and implementation of financing schemes and new economic models.
- A better awareness and acceptance of best practices.

The Mission pour l'Informatisation du Système de Santé (MISS), the eHealth department directly linked to the cabinet, was recently asked by the minister to elaborate a global strategic plan on eHealth and health information system. It has already launched a wide consultation with all the concerned stakeholders. Seven working parties have been created.

Core resources

http://www.sante.gouv.fr/htm/dossiers/t2a/doc_pdf/ehealth_france2.pdf#search=%22%22e-health%20in%20France%22%22
http://www.assemblee-nationale.fr/12/pdf/rap-off/i1686-t1.pdf
http://www.euser-eu.org/eUSER_eHealthCountryBrief.asp?CaseID=2220&CaseTitleID=1061&MenuID=118
http://www.legislation.cnav.fr/textes/loi/TLR-LOI_2004810_13082004.htm
http://www.hanbultech.com/hanbultech/fr/download/29_juin/Presentation%20DGE-STSI%202.pdf
http://www.admi.net/literacy/pagsi/
http://www.d-m-p.org/
http://www.gip-cps.fr/uk/intro/index.html
http://www.sesam-vitale.fr/programme/programme_eng.asp
http://www.netcards-project.com/index.php
http://www.sante.fr
http://www.plancancer.fr/

Germany

Strategic perspective

German eHealth activities are embedded in the context of overall healthcare reform. Specific elements are codified as follows in the Law for the Modernisation of Statutory Health Insurance (2003) which calls for the introduction of an Electronic Health Card ("Gesundheitskarte") and the establishment of institutions deemed necessary for its successful implementation:

- The Electronic Health Card: the law details mandatory and voluntary applications, patient and other rights and obligations, and the implementation of the necessary nationwide information, communications and security infrastructure
- Patient identifier: the law establishes a Trust Centre for the Health Insured Number (Vertrauensstelle Krankenversichertennummer) whose role is to develop a safe system to determine and assign a unique number for each German citizen
- (Health) Telematics Corporation (gematik - "Gesellschaft für Telematik"): the law establishes this corporation and details its obligations to plan, implement and manage the necessary eHealth infrastructure services.

In July 2005, the Federal Ministry of Health and Social Security summarised its overall position concerning strategic eHealth developments in a paper entitled "The German eHealth Strategy". That strategy document formulated the policy intentions and perspectives of the statutory legal provisions in non-juridical language. This strategy for achieving the modernisation targets builds on two pillars:

- The first pillar is an ICT infrastructure financed by one or more high-volume, ubiquitous applications so that other applications can build on the infrastructure without also having to bear those basic costs. The following applications are specified: online verification of insurance status (mandatory for citizens) including availability of all data for an electronic European Health Insurance Card (eEHIC), electronic transmission of drug prescriptions (mandatory), and drug interaction and contraindication checks (voluntary for the insured).
- The second pillar of the German eHealth strategy is the later implementation of a private electronic patient record (ePR) and other, step by step, voluntary applications that use the already-established infrastructure.

Each citizen will own its own ePR. He will control who can access the record; he will be able to add their own data and also delete information. The ePR cannot substitute for records that a health care provider must maintain itself. It is also not available for research or public health uses.

Implementation perspective

The detailed specification of a medium term technical and organisational framework for ICT, including aspects of information, communication, security and privacy in health care provides the basis of this vast national project.

gematik was established in January 2005. Early in 2006, a laboratory for testing the Electronic Health Card, the Health Professional Card, and corresponding components was established at gematik. This laboratory conducts functional and performance tests of basic off-line and on-line applications using components of a pre-defined highly secure (VPN-based) infrastructure, such as the card terminal/connector, the prescription data server and the emergency dataset. gematik has already issued its first certificates to vendors, a process which will enable field tests to start in Spring 2007. The purpose of the so-called connector is to allow any health care provider secure, direct access to the national system and to allow the applications exchange data in a fully interoperable manner. Where a one-to-one transfer of electronic data or interoperability between application-to-application is desired, adjustments to their own software will probably be required.

Germany

Each function will first be tested in the laboratory, and then under real- life conditions. The first medical application to be tested is electronic prescription. Emergency data of patients (or rather a "basic medical data set") is expected to follow soon afterwards.

The second stage will undertake field trials in eight regions selected in 2005 from all across Germany. The field trials will start in 2007 with up to 10,000 citizens in each region. Doctors, hospitals and pharmacies involved will receive specific funding for participation. The German Federal Minister for Health, Ulla Schmidt, has also announced that presuming a successful outcome of the initial trials, each of field tests will be extended to cover up to 100,000 users during the second half of 2007.

Concerning multi-national eHealth cooperation, about 5 years ago public health insurance funds in Germany, the Netherlands and Belgium together with hospitals in tourist regions along the North Sea coast introduced a service, facilitated by the German AOK Rheinland GesundheitsCard Europa integrating the European Health Insurance Card (EHIC), that supports the immediate access of travelling citizens to healthcare by using a secure web-based application, which instantaneously assures participating hospitals of the insurance status of clients and guarantees reimbursement within weeks via electronic transfer of administrative data. Hundreds of thousands of citizens have already benefited from no longer requiring the E111 paper form or a separate EHIC when travelling abroad. The TEN4Health project which involves health insurance companies and hospitals in Austria, Belgium, the Czech Republic, Germany, Italy and the Netherlands will further expand such services. Another project with German participation is NETC@RDS which is piloting a pan-European infrastructure for health insurance validation involving by now actors in 15 Member States.

Future activities

A final date for the nationwide introduction of the card has not yet been fixed, but it is expected that roll-out could start in 2008. As required by law, more ambitious applications will be implemented in the coming years: these will include specification of standards for testing and the voluntary implementation of further functions like eMessaging; full documentation of all prescribed or otherwise bought or taken drugs; electronic patient record (integrated documentation of data on test results, diagnoses, therapies, treatments and immunisations covering all interventions across all service providers); and the integration of data supplied by the patient or third parties.

Core resources

**Bundesministerium für Gesundheit und Soziale Sicherung (2005): The German eHealth Strategy. Berlin/Bonn, July.
Bundesministerium für Gesundheit
(Federal Ministry for Health)**
http://www.bmg.bund.de
Gesellschaft für Telematik
http://www.gematik.de
Electronic Health Card
http://www.dimdi.de/static/de/ehealth/karte/index.htm;
http://www.die-gesundheitskarte.de/

Greece

Strategic perspective

The national eHealth Roadmap was launched in June 2006 by the Ministry of Health and Social Solidarity, as part of the National Strategy for Quality and Safety of Healthcare Services in the Knowledge Society. It was based on a critical review of the national 2002 – 2006 ICT Action Plan and includes re-orientation where appropriate to accelerate national progress, incorporate new policies and align to the European eHealth Action Plan.

The 2006 eHealth Roadmap sets out priorities and encompasses both strategy and action plans for the period 2006 – 2015 in the strategic areas of quality and safety of health services, which constitute the overriding strategic objectives. The strategy is to establish the National Health Information System (NHIS) i.e. a national system for organising health related information. The implementation of an Electronic Patient Record system is the major objective and priority of the NHIS.

IASYS is the central IT infrastructure of the NHIS and provides the national interoperability framework intended to enable Greek health organisations seamlessly access and share health related information. The National Integrated Shared Care Record, together with the protocols agreed across the multitude of public and private health care organisations and services, are key elements of the IASYS strategy.

Implementation of the ten year eHealth Roadmap is split into three major phases:
2006 – 2007
Strengthening standardisation and communication infrastructures, and creating widespread market preparedness through strategic pilots (health cards, ePrescription, eCare), and legislative interventions;
2007 – 2012
Large-scale pilots, demonstrating and enabling Health Networks and integration at the regional level;
2012 – 2015
Integration at the national level.

Implementation perspective

The Ministry of Health and Social Solidarity, together with other direct beneficiaries are implementing the 2006 – 2007 programme, which comprises:
· further development and/or deployment of the 17 regional Integrated Information Systems already in progress,
· standardisation activities,
· a Health Portal which serves both as the interface to the NHIS and as a platform for eHealth services to citizens,
· a study on the National Telemedicine Service, that will define support mechanisms (e.g. contracts and agreed protocols) for the coordinated delivery of telecare across different health service delivery provision points,
· an eHealth Forum representative of all major stakeholders as a mechanism to address issues of national importance and for making shared informed decisions,

Greece

an eHealth Forum Portal for professionals, which provides access to important professional tools and information (e.g. on health standardisation).

Associated projects, such as:
- smart card-based health insurance project for civil servants,
- information system for the national ambulance service,
- information system for organ-transplantation coordination and control,
- information system covering transactions on patient charges between hospitals and insurance organisations,
- EDI-based hospital procurement,
- national blood-bank information system,
- primary care information system,
- medical libraries information system,
- telemedicine.

Future activities

The ten-year action plan is outlined in the strategic perspective section. It is intended to progress the following healthcare systems issues in each of the three implementation phases.

❶ Information distribution infrastructures and systems, which will enable decentralised public health and welfare services to be based more effectively on evidence and operational data. These new systems will include emphasis on:
- health prevention and promotion,
- advanced tele-medicine applications,
- a National ICT framework for biomedical technology management.

❷ Health networking and telematics services, which are based on a secure data network linking health and social security bodies, and healthcare, community-care and social-security professionals. These services

include ePrescribing; eReferrals; eLabs together with adequate provisions for appropriate accreditation, testing and certification. Such projects may be taken up in partnership with the private sector.

❸ Development of information systems to improve the services provided by welfare and mental health bodies to the elderly and people with special needs.

Core resources

Ministry of Health and Social Solidarity
http://www.mohaw.gr/gr/index_html
IASYS - the Integrated Information System for Health Care: Master Plan
http://www.mohaw.gr/gr/europe/kps/IASYS.pdf
Observatory for the Greek Information Society
http://www.observatory.gr/
Managing Authority of Operational Programme Information Society
http://www.infosoc.gr/infosoc/en-UK/default.htm

Hungary

Strategic perspective

This factsheet presents eHealth strategies and implementation activities driven by the Hungarian government until April 2006. Following the parliamentary elections in April 2006, the new government may formulate new guidelines for eHealth in Hungary.

eHealth policy in Hungary is the responsibility of the Ministry of Health, together with the Prime Minister's Office, and the National Office for Research and Technology. In practice, the Ministry of Health develops and supervises the national eHealth programme under general guidelines defined by the eGovernment Centre of the Prime Minister's Office. A basic principle is that the national programme aims to comply with the European Commission's eHealth Action plan. The responsibility of county and municipal authorities lies mainly in the implementation chain.

A legal framework for data protection, confidentiality and digital signatures was established in Hungary in 2000 and 2001. In 2002 the Hungarian Government published the Hungarian Information Society Strategy (HISS), followed by the HISS for Health and Social Affairs in 2003 and the National eHealth Programme in 2004. At that time the Ministry of Health and the Ministry of Informatics and Communication (which was closed following the 2006 Spring Election) set up an eHealth programme management unit under the umbrella of the National Institute for Strategic Health Research. These strategies will be modified in line with the revised Convergence Program of Hungary which was accepted by the Financial Ministers of EU in October 2006.

Implementation perspective

The Hungarian Health Sector Portal was established in 2003. It offers access to evidence-based medicine resources (CE-Online), drug information and medical eBooks to health professionals. A further extension of this initiative was the development of a public health por-

tal called "Dr. Info". This provides citizens with internet-based access to online information on availability of healthcare services, providers and drugs as well as popular medical eBooks. Furthermore, a disability portal was set up in 2005, providing news, information counselling and other community services. A public key infrastructure platform for eHealth services was also established.

Implementation of the eHealth Programme started in January 2004. The Programme identified eleven activity groups which cover about 25 initiated projects that comply with the Programme. These main groups of projects included the following:

- Maintenance of the information strategy.
- Elaboration of eApplication data models and communication standards (ePrescription, eConsultation, ePatient Record, eResults, eReimbursement).
- Concept definition and implementation of an ontology management standard.
- Introducing the digital signature and implementation of Trusted Third Party (TTP) services in the health and social care.

Hungary

- Electronic Certified Public Registries (ECPR).
- Telephone and internet health information and advice service (HealthLine – Dr.Info).
- Development of evidence-based medical knowledge bases, knowledge dissemination.
- eHealth services for disabled people (internet portal).
- Utilisation of results of Hungarian health informatics research and development projects.

WORK IN PROGRESS:

- In the framework of the European Regional Development Fund for IT development in health care in regions lagging behind is currently underway in the regions of Northern Hungary, Northern Great Plains and Southern Transdanubia. This project will connect all levels of healthcare and provide eHealth services such as an eHealth record, eConsultation and ePrescription.
- A pilot system of Electronic Certified Public Registries in the Health and Social Sector is under development and the registries will be available on the Hungarian Health Portal.
- The OEP West Hungarian project has issued over 300,000 European Health Insurance Card (EHIC) cards since 1 October 2005 via 40 offices fully equipped to personalise and issue cards. As a member of the NETC@RDS consortium it is also actively participating in the next phase (Initial Deployment, 2007-2009) of this pan-European service for the electronification of the EHIC.

Future activities

The Health Reform legislation announced in October 2006 as part of the revised Convergence Programme will guide the development and implementation plans for the period 2006 – 2008 and beyond. This legislation envisages significant changes in drug prescription and dispensing practices which will be enabled by the online health professional portal and transaction monitoring and analysis. In addition the future Act on Medicine Economy would regulate the fees set by pharmaceutical manufacturers and distributors. It would also make public the system of drug price subsidies. These future activities are likely to add renewed focus and follow up regarding the priority objectives outlined in the mid-term activity plan (2004 – 2006):

- Implementing a comprehensive health and social monitoring system.
- Establishment of a telephone and online health information and advice service.
- Regional demonstration pilots of integrated health information systems.
- Modernisation of health and social information system.
- Implementing eBusiness foundations for health services.

In conclusion, eHealth is a major policy initiative underlying both the National Health Strategy and the Convergence Programme. It is planned to expand the health professional portal to include ePrescription and other electronic transactions and ultimately to merge it with the portal for citizens. For example, doctors will be able to rely on a software programme to make drugs prescription safe and professionally sound yet cost-effective. According to the plans, the insurer will be responsible for running public procedures to accept each new medication for social security support and determine the rate of such support.

Core resources

Hungarian Information Society Strategy, Health and Social Services
http://www.eski.hu/eprogram/english/Mitsesz.pdf
eHealth in Hungary – a short introduction
http://www.eski.hu/eprogram/english/english_index.htm
National Office for Research and Technology
http://www.nkth.gov.hu
Prime Minister's Office
http://www.meh.hu/szervezet/hivatalok/ekk

Ireland

Strategic perspective

In Ireland the Department of the Taoiseach (Prime Minister), the Department of Health and Children, and the Health Service Executive (HSE) are involved in eHealth policy. In the context of healthcare reform the HSE has been established. Since 1 January 2005 it has full statutory responsibility for all health and personal social services.

The HSE National ICT Directorate works in partnership with the service pillars and other directorates to ensure that the programme of ICT eHealth projects that are undertaken is closely aligned with service needs, and that the projects are effectively managed to deliver speedy, high-quality results within the constraints of funding and capacity to deliver. The potential of ICT to add value and reduce cost is substantial.

Plans for a National Information and Quality Authority (HIQA) are being progressed and once established it will have responsibility for standards and quality initiatives in this area. Legislation already exists on the issues of data protection and confidentiality.

In 2004 the publication "Embedding the e in Health" set out a strategic perspective for building an ICT framework for the Irish Health System. It puts ICT in the context of healthcare reform and citizen centred services. The document is complementary to the National Health Information Strategy (NHIS 2004) which sets out priorities over the coming years. In the short term (years 1 – 2, phase 1) work will be conducted on inventories and standards as well as on infrastructure roll out. In the medium term (years 3 – 5, phase 2) a structured approach to the identification and addressing of information deficits will be applied. New information services, such as the public health observatory, will be developed and new information functions in existing agencies will be set up. In the long term (phase 3) an Electronic Health Record (EHR) system will be implemented. The EHR is considered key to the development of a patient centred healthcare model.

Implementation perspective

The HSE has the largest ICT infrastructure of any organisation in Ireland. Integrated Infrastructure development has been identified as one of the priority areas for HSE. The aim is to have an enabling architecture and platform implementation plan to further support and enhance system and services deployment nationally.

The overall goal of the Architecture programme which will be completed in 2007 is to support new ways of working e.g. teams; enable enhanced service delivery for patients and provide improved management information systems to inform organisational development into single national organisation. This has the capacity to achieve significant savings and will provide a mechanism to deploy operational eServices for citizens.

The Health Service Executive (HSE) southern area, formerly Southern Health Board (SHB) had developed its own ICT strategy – Health eSHB –, and has pioneered a range of innovative information and communications developments. An integrated patient management system

Ireland

has been deployed since 1997, evolving from a stand alone administrative system into an integrated clinical support system. SHB's website is a combination of information, access to services and interaction with the board; it is also accessible through public access points. The Health eSHB has ten strategic goals, including implementing an Electronic Health Record, and to "eEnable" clinical and administrative systems. This work was awarded 'Best Practice in eService Delivery by the European Commission.

Furthermore, the national GP Messaging project has developed an electronic communication system between primary and secondary care. The message types available electronically are: laboratory results, radiology results, death notifications, discharge notifications, discharge summaries, A & E attendance notification, waiting list updates. These messages are specified in HL7 (version 2.4) and formatted in XML (version 2.0).

Future activities

A review of the eHealth situation in Ireland was undertaken for the Department of the Taoiseach by the Information Society Commission - An eHealthy State? It outlined the various 'e' requirements for the Irish Health Services and made some practical recommendations for achieving eHealth in conjunction with the overall plan for eGovernment and i2010 in Ireland. The HSE and its partners in care will continue to work towards these goals.

In addition; short, medium and long term goals are outlined in the National Health Information Strategy, as described above. Within 2007 the Health Information and Quality Authority should become operational, which will assist the impetus for the further realisation of the national Health Information Strategy.

Core resources

Embedding the e in Health
http://www.hebe.ie/Publications/SubjectArea/InformationCommuni
cationTechnology/ICTStrategy/FiletoUpload,1933,en.pdf
National Health Information Strategy
http://www.dohc.ie/issues/health_strategy/
Health eSHB
http://www.shb.ie/class-1610590019.cfm
Department of the Taoiseach by the Information Society Commission - An eHealthy State?
http://www.isc.ie/downloads/34842_e-healthy_state.pdf

Italy

Strategic perspective

The Italian eHealth strategy is strongly influenced by the radical change in the relative roles and responsibilities of the State and the Regions embodied in the constitutional reform of 2001 (Constitutional Law no. 3 of 18 October 2001). Since then, the Italian strategy comprises three interconnected programmes addressing national, semantic, and territorial needs in order to achieve the following key objectives:

1 to improve the efficiency and effectiveness of the healthcare system as a whole,

2 to assure the Fundamental Levels of Healthcare Services throughout the territory,

3 to speed up the technological innovation in citizen/patient-centred social and health care services.

The governance of the first and second areas of the programme is entrusted to an inter-institutional body referred to as the "Production Room" (Cabina di Regia), coordinated by the Ministry of Health, and composed of representatives of central government and of Regions.

Implementation perspective

NATIONAL AREA: THE NEW HEALTHCARE INFORMATION SYSTEM (NSIS)

The New National Healthcare Information System (NSIS) was proposed in February 2001 by the Permanent Committee for political issues between central and regional authorities (Conferenza Stato-Regioni) as a governance tool to support, oversee and monitor the Fundamental Levels of Healthcare Services (LEA; Livelli Essenziali di Assistenza). These are the healthcare service levels guaranteed by the National Healthcare Service as appropriate to particular clinical conditions and care contexts. The NSIS strategic framework has two primary development objectives:

- build an integrated system of homogeneous individual healthcare information records, where the patient information and the care delivery structure are the central information entities. The goal is to make information available on: the operating facilities at all healthcare levels, the services delivered, the resources used, and the related costs.

- contribute significantly to Public Health Authorities' governance principles and capabilities by ensuring the required analytical data on individual citizen healthcare is available, and using pseudo-anonymisation of patient identifiers to preserve privacy, while grouping all healthcare events for each patient.

The result is an information system defining a minimum dataset for analytical data to be used for governance needs for health authorities.

SEMANTIC AREA: THE NATIONAL HEALTHCARE SERVICE'S "BRICKS" (MATTONI)

This "Bricks" programme, started in 2004, establishes the semantic toolkit required to ensure a common language to classify and codify the concepts in a uniform manner (e.g. services, facilities), to share methodologies for measuring quality, efficiency, and appropriateness of the Regional Healthcare Services (e.g. waiting times, appropriateness of services) and to achieve a uniform approach

Italy

in the generation of the information when organising, managing, and governing the Fundamental Levels of Healthcare Services. The toolkit also helps to ensure that the information systems autonomously developed by the Regions, and by the local healthcare Administrations, will all interoperate.

The common elements, named "Bricks" (Mattoni) of the Healthcare System, have been organised into 15 thematic sub-projects, with a Region responsible for managing each sub-project. One particular "brick" defines the guidelines to develop the Electronic Patient File.

TERRITORIAL AREA:
THE EHEALTH BOARD (TSE)

On the initiative of the Ministry of Health and of the Department of Innovation and Technologies of the Ministry of Reforms and Innovations in Public Administration, a permanent "eHealth Board" (TSE; Tavolo di lavoro permanente per la Sanità Elettronica) was established in 2004. This is the setting for technical discussion and consultation in order to harmonise the national and regional eHealth policies and to help coordinated implementation of the respective action plans.

TSE's first result is the document "Shared policy for eHealth" (Politica condivisa per la Sanità Elettronica) which adopts the European Union's strategic objectives contained in the 2004 eHealth Action Plan in the Italian context.

In March 2006, TSE published the document "Architectural strategy for eHealth" (IBSE; Strategia architetturale per la Sanità Elettronica). The document constitutes a first high level guideline addressing the design of the national architecture for eHealth. The architectural vision considers as essential the following requirements:
- all clinical information of the patient is available anytime and anywhere,
- the system respects of the federated architecture of the Italian Healthcare System,

- the system has a high level of security and respects the Italian legislation on privacy,
- the system has a high level of reliability and availability,
- the system has a modular structure which enables a progressive implementation nationwide,
- the system safeguards existing investments and takes into account the interactions required with existing legacy systems,
- the system is based on the use of open standards.

Future activities

TSE has also launched other important eHealth pilots, such as:
- general practitioners' network for eHealth services (13500 GPs in nine Southern Regions),
- eBooking (five regions),
- eSignature for operators (200,000 smart cards in 16 regions),
- telemedicine and tele-education,
- Oncology Excellence Centers Network,
- proactive prevention (disease management).

Core resources

Ministerio della Salute
http://www.ministerosalute.it/nsis/nsis.jsp
Strategia architetturale per la Sanità Elettronica
www.innovazione.gov.it/ita/struttura/dipartimento/progetti/
allegati/TSE-IBSE_Strategia_architetturale.pdf
TSE
http://www.sanitaelettronica.gov.it/xoops/

Latvia

Strategic perspective

The health care landscape in Latvia is shaped by Parliament and relevant parliamentary committees, by the Ministry of Health and the institutions under its direct supervision, by Compulsory Health Insurance State Agency, by professional associations and by regional administrations.

The Ministry of Health is the main organisation responsible for the development of national eHealth policy and related implementation plans. The central strategy, defined in the concept document "eHealth in Latvia", was approved by the Cabinet of Ministers of Latvia on August 17, 2005. The action plan for implementation of the priorities defined in the strategy document is expected to be published before the end of 2006. These specific activities related to the establishment of an eHealth environment are accompanied by broader documented plans, "e-Latvia 2005-2008", aimed at developing the information society in Latvia. The main broad objective is to foster the dynamic development and competitiveness of the country in the knowledge-based economy. Priority domains indicated include eGovernment, eLearning, eBusiness, eHealth, Broadband access to services, and Security.

Latvian legislation covers the issues of data protection, telecommunication, digital signatures and Health-IT product liability through relevant acts and regulations.

Implementation perspective

The priorities defined in the action plan "eHealth in Latvia" include:

· establishment and implementation of an electronic Health Card and of an electronic European Health Insurance Card
· implementation of Electronic Health Record by health care institutions

· improvement of linkage and connection between health care institutions' internal information systems as well as the improvement of electronic data exchange between state health care registries, health authorities and managers
· standardisation of health related activities and provision of health care services electronically and online
· improvement of access to health related information for society and health care professionals
· development of telemedicine.

Current focus is mainly on achieving the preconditions required to launch eHealth implementations in Latvia. Among others, these measures address the deployment of electronic signature functionality which would also support the introduction of electronic identity cards for citizens. The improvement of IT literacy among health professionals is also an important motive as well as the definition of the chain of health care services and the implementation of IT technologies within healthcare services.

Future activities

The electronic European Health Insurance Card is scheduled to be adopted in Latvia in 2008. There are also plans to implement the electronic health record, which will be stored, maintained and accessible through a centralised system. These goals ensure that considerable pressure is being placed on improving interoperability between information systems used in future health care facilities.

Lithuania

Strategic perspective

The Ministry of Health is the leading ministry responsible for development of eHealth policy in Lithuania. Its strategy document "eHealth Strategy for 2005-2010" aims to modernise the healthcare system nationally using ICT's to improve efficiency. In order to implement goals included in the strategy document there are plans to create eHealth Information System.

The eHealth strategy is addressed to patients, citizens and all professional groups involved in the healthcare domain.

The underlying emphasis is on the empowerment of patients so that they will be able to participate actively in their own health-supporting activities. Access to information and services enabled with eHealth solutions is a key aspect of this patient centred strategy.

The Lithuanian legislature has addressed the issues of data protection, telecommunications (with regard to data protection and confidentiality) and digital signatures. The legal environment was also adjusted to align more closely with requirements defined under European Union directives and other regulations.

Implementation perspective

The "eHealth Strategy for 2005 – 2010" addresses the requirements signalled by the main groups involved in the Lithuanian healthcare domain. This includes patients, citizens, health professionals, administrators and decision makers. The most important patient centred aspects being covered and improved by the national eHealth implementation plans are visibility, availability, accessibility, user-friendliness and usability.

Prior to the preparation of the eHealth Strategy, other policy documents had been developed by the Health Economics Centre under a project financed by the World Bank. The relevant project plan, entitled "Lithuanian eHealth Strategy and Program – year 2004-2010" was published in 2004. This has assisted the Ministry of Health in developing its official eHealth strategy. The main findings signalled in this World bank funded project was that health care reform enhancing effectiveness, quality and accessibility of health care services for patients by the use of a comprehensive eHealth system would also be able to provide information for administrative and clinical decision-making.

The strategy of eHealth development in Lithuania includes the following action areas:
- development of the model for resource management system
- definition of the eHealth priorities and development plan covering issues of telemedicine, clinical decision support, telecare, monitoring, patient health record, distance learning and patient awareness
- proposed model for computerisation and networking of institutions covering GP rooms, outpatient clinics and hospital information systems
- definition of the public health monitoring information system according to the main EU activity areas

Lithuania

- integration of the health care registers and databases within the integral health information system
- formation of the infrastructure of the eHealth system: safety, technical resources, data transmission infrastructure and data interchange standards.

The Telemedicine Centre of Kaunas University of Medicine is the leading research centre involved in the promotion and provision of telemedicine type solutions and services in Lithuania. The mission of the Telemedicine Centre is to initiate, form and introduce telemedicine developments in the University and in the country, and to prepare policy recommendations for health care institutions and government institutions. Key priorities of the Centre activities include:

- provision of methodical leadership in the application of telemedicine technologies for medical diagnostics, consultation, monitoring and scientific investigations in all stages of related studies;
- navigating through the programmes and sources of financing which could stimulate the development of telemedicine;
- organisation of discussion sessions and conferences on telemedicine;
- organisation and participation in national and international telemedicine projects.

The Telemedicine Centre services range in particular over the following application fields: teleconsultations and second opinion, distance education, image processing, as well as information exchange and creation of international databases.

Future activities

The future activities envisaged in the "eHealth Strategy for 2005 – 2010" are well defined. They aim to realise an eHealth infrastructure and environment which offers services to empowered citizens and patients and also supports health professionals in offering the population high-quality services based on modern evidence-based strategies.

Core resources

Ministry of Health of the Republic of Lithuania
http://www.sam.lt
Elektronines Sveikatos Stratgija 2005-2010
http://www.sam.lt/images/Dokumentai/eSveikata/
esveikata_strategija_ web020.doc
**Health Economics Centre: Lithuanian E-Health Strategy
and Program – year 2004-2010, 2004**
Telemedicine Centre of Kaunas University of Medicine
http://www.tmc.kmu.lt/

Luxembourg

Strategic perspective

The Ministry of Health is responsible for the overall eHealth policy in Luxembourg. It is assisted in this role by the Ministry of Social Security and by the eLuxembourg Service.

Luxembourg has supported several eHealth projects during the last decade. However, the approach was uncoordinated and piecemeal in the absence of an agreed national eHealth strategy. In July 2005, the Ministry of Health set up a national eHealth Working Group, to build on the existing frameworks and define such a policy. The group included representatives of the responsible ministries, as well as the AMMD (Medical Doctors' association), EHL (hospitals association), UCM (sickness funds), Syndicat des Pharmaciens (pharmacists) and the CRP-Santé and CRP-Henri Tudor (public research centres). Their work concluded with a proposed eHealth action plan report in July 2006. Three months later, the Government Council approved the eHealth proposal and published the key policy intentions and strategic targets for the eHealth domain.

The pillars of this Luxembourg eHealth strategy are:
- creation of a permanent national eHealth Advisory Board, with specific thematic sub-groups or project groups,
- creation of a larger common telematic platform, by gradually enhancing the facilities and services of the existing HealthNet infrastructure towards a broader public usage,
- creation of a national Public Health Portal, that would also be able to interact with the common telematic platform and support interactive services,
- support for integrated healthcare and better sharing of information, through the definition of a common framework for: patient identification and consent, data security and data protection, to be achieved mainly by implementing an Electronic Health Card solution, common guidelines and rules for data access and exchange; shared eHealth applications; interoperability, quality and codification of data, to be achieved mainly through certification of applications and adoption of international standards,
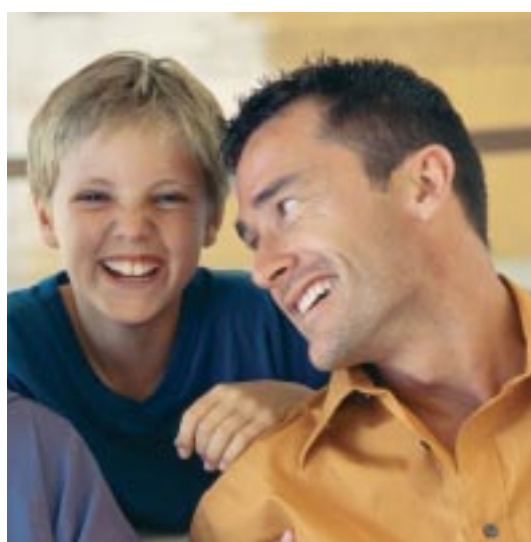
- support for the development of key documentation management applications in the areas of radiology, laboratory results, and drug prescription, which will create a critical mass of applications and be a first step towards the implementation of the full scale electronic patient record.`

For a small country like Luxembourg, with a large population of commuters covered by its social security and healthcare system, facilitation of patients mobility and cooperation at a European level are also primary strategic eHealth goals.

Implementation perspective

In early 1995, the Ministry of Health initiated and funded a project to build a secure network between Luxembourg's hospitals, the sickness funds and other stakeholders in the healthcare domain. The Santec branch of the CRP Henry Tudor was chosen to develop the network. Since 2001 a number of projects were funded to develop common services. The resulting HealthNet is now the common network for the healthcare and long-term care sector. In July 2005,

Luxembourg

the "GIE HealthNet" was incorporated as the institution in charge of exploiting the common infrastructure and applications. This is a strategic partnership between the Luxembourg Government (Ministry of Health), the AMMD, the EHL and the UCM (sickness funds). Following a public tender process, responsibility for the technical maintenance and exploitation of the network and associated applications were outsourced to a commercial provider. It will play a key role in future developments.

The following implementation projects should be noted:
- Portail Santé: after a feasibility and evaluation phase, work to build the Public Health Portal is ongoing and it is expected to go live during the second quarter of 2007.
- Carnet Radiologique: establishes a radiological record in electronic form, containing the history of the radiological examinations of each patient. A study of existing data and its codification in Radiology Information Systems (RIS) and Picture Archiving and Communication Systems (PACS) systems has so far been completed. A practical implementation is scheduled in one hospital in 2007. This project is a precursor of the larger electronic medical record.
- Programme Mammographie: radiological pictures are exchanged through Healthnet within the mammography-screening program for second opinion and easier transfer purposes.

These projects will continue. In 2006 an analysis of existing ICT solutions in the hospital sector has also been started.

Future Activities

As a preliminary step to further new projects, a concept study is scheduled to be conducted in 2007. This study should define the cornerstones of the future ICT infrastructure and help to clarify key issues related to this ICT infrastructure. Concept studies and implementation work is also planned in the next years in the field of ePrescription, as well as in more thematic healthcare domains, like national electronic patient records for medications and in oncology as first steps of a broader electronic patient record.

The establishment of a new national Patient Identifier and of an Electronic Health Card is expected to be a keystone project for future developments. The Luxembourg Government is developing a national PKI via a public-private partnership (LuxTrust). Building on this infrastructure, the introduction of an electronic health card is targeted after a pilot field trial in combination with the future "carnet radiologique".

Core resources

Ministère de la Santé
www.ms.etat.lu
Ministere de la Sécurité Sociale
www.mss.etat.lu
eLuxembourg, a specialised body which coordinates ICT programs, assists and implements eGovernment projects under the authority of the Ministry of Public Administration and Administrative reform
www.eLuxembourg.lu
HealthNet Luxembourg(R), a secure telematic network for Healthcare Professionals in the Grand-Duchy of Luxembourg
www.HealthNet.lu
Resource Center for Healthcare Technologies (CR SANTEC)
www.santec.tudor.lu
LuxTrust, certification authority which issues and manages electronic certificates
www.luxtrust.lu

Malta

Strategic perspective

Over the last few years, extensive health care reforms have been planned and are currently being implemented by the Ministry of Health, the Elderly and Community Care. The main aims and policy orientation of these reforms are to establish an integrated management approach and to provide more client-oriented, outcome driven (evidence-based) and financially sustainable services.

In 2005, the Government embarked on a formal initiative to formulate a national eHealth Vision and strategy. A final draft document was completed early in 2006 and received Ministerial approval at Health Policy Board level in May 2006. The document proposed a vision statement, six strategic objectives, and specific eHealth deliverables and targets on a national basis to guide initiatives in this sector. It is Government's intention to publish the draft vision and strategy for public consultation during 2007, to give the opportunity to all internal and external stakeholders across both the public and private healthcare systems to contribute to the final document.

Other relevant initiatives and actions include the National ICT Strategic Plan and the "National Broadband Strategy".

Implementation perspective

The Ministry of Health, the Elderly and Community Care has made a number of healthcare services available online to Maltese citizens and patients via the eHealth Portal. There are several eHealth Services available at this portal, the strategy of which is intended to inculcate a health and service culture by providing the following facilities:

- An online application for the European Health Insurance Card as a trans-European health coverage for Maltese citizens travelling inside the European Economic Area (EEA), to be eligible for free or reduced-cost emergency treatment in public hospitals or other public health facilities.

- An online patient referral system for an appointment within the government hospital outpatient services. This is a facility for all Maltese doctors and other authorised health professionals to apply for a new appointment for their patients from any internet access point.
- This service offers also various electronic methods of notification and reminders to the patient such as through text messaging (sms) and eMail. It also provides the means for the patient to manage his own appointments through an electronic facility for rescheduling and cancellation of an appointment.
- An online peer reviewed audio visual Patient Electronic Library. This library is accredited and complies with 53 standards of quality and accountability verified by independent audit.
- An online facility for Maltese citizens to submit public health related complaints.
- A regularly updated online information system, and location maps, of pharmacies open on a Sunday or public holiday.
- An online registration facility to become a potential blood donor. This also allows for an electronic screening of whether a client is eligible to donate blood.
- An online application to attend a weight reduction programme.
- An online application for Maltese citizens to attend a smoking cessation programme.
- An online application to attend a sexual and reproductive health counselling session.
- An online facility to request information and advice from the Genito Urinary Clinic physician on sexually transmitted diseases (e.g. HIV and related issues).

The new immunisation system currently being implemented in the eHealth portal will be offering further a facility to:
- Keep an online record of vaccines and vaccinations by the National Immunisation Centres (NIS) and private practitioners, for residents of Malta and visitors to NIS centres.
- A facility to receive automatic reminders for due vaccinations via sms or eMail, as well as a notification system

Malta

for defaulters of mandatory vaccinations which eventually feeds information to the Public Health Inspectorate for follow up and legal action necessary.
- A facility for the online registration of vaccinations by private general practitioners via the Internet.
- A facility for citizens to view their and their dependent's vaccination records and their future schedule online.

Other current projects are the implementation of information websites with regulated fora and electronic transactions for diabetes, progeny, breast care, speech language, sports health and the elderly. This is planned to expedite the development and implementation of more online services. A content management system to enable health professionals to build and maintain standardised information websites is also one of the ongoing projects planned throughout the period 2007-2008.

The online application for the European Health Insurance Card (EHIC) has proved to be one of the most popular eHealth Services in Malta. This plastic card, which has replaced the E111 paper form, benefits European Union citizens by providing them with a single personalised token that demonstrates their right to access public healthcare in another EU Member State as well as in Norway, Iceland, Liechtenstein and Switzerland.

Future activities

Since 2005 government's main focus in the domain of ICT in health has been on the implementation of an Integrated Health Information System (IHIS) for all of Malta's public hospitals and health centres. This will build on the achievements of the Patient Administration System (PAS) launched in 1997 at Malta's main hospital, St Luke's Hospital, which already provides services to several hospitals and health centres across government's country-wide telecommunications network. Records are linked through a unique patient identifier, thus providing the basis for a national Electronic Health Record (EHR). The new IHIS will have a much broader range of functionality at the

operational level than the PAS; this will greatly expand its potential as a base for future eHealth services to be provided directly to patients and their healthcare providers.

The development of the IHIS is moving hand in hand with the completion of the new Mater Dei Hospital, which is scheduled for July 2007. By that date, the infrastructure of the new hospital will be in place together with the first six IHIS applications: The Laboratory Information System (LIS), Radiology Information System (RIS), Picture Archiving and Communications System (PACS), new Patient Master Index (PMI), Electronic Medical Records (EMR) and Order Management and Fulfilment (OMF).

Phases 2 and 3 of the IHIS, which are planned for implementation in the years 2008 to 2010, will see the introduction of a further 21 functionality modules designed to meet both clinical and managerial requirements in an integrated fashion.

Core resources

Ministry for Health, the Elderly, and
Community Care, eHealth Portal
http://www.ehealth.gov.mt
eHealth Malta
http://www.sahha.gov.mt/showdoc.aspx?id=378&filesource=
4&file=ehealth.pdf
Public Health Report, Malta 2002
http://www.sahha.gov.mt/showdoc.aspx?id=41&filesource=
4&file=publichealthreport2002.pdf
Ministry for Information Technology and Investment,
Malta, Draft National ICT Strategic Plan, 2003
http://www.miti.gov.mt/docs/
National%20ICT%20Strategy%20v2.pdf
Ministry for Information Technology and Investment/Malta
Communications Authority:
The National Broadband Strategy. Consultative document, 2004
http://www.doi.gov.mt/en/press_releases/2004/04/pr0610.pdf

Netherlands

Strategic perspective

In recent years the Dutch government, the National IT Institute for Healthcare (NICTIZ) and healthcare professionals have together laid the foundation for nationwide electronic communication, and exchange of medical data, in the healthcare sector. The expectation is that good use of ICT will contribute to the quality, effectiveness and accessibility of healthcare, now and in the future. In particular, medical staff will be better enabled to provide the requisite care through improved access to accurate and up-to-date data on patients.

The national infrastructure for healthcare (AORTA) is due for realisation in 2006 and will enable the secure and reliable exchange of medical information. It consists of several components, such as a National Switch Point (NSP) which provides a reference index for routing, identification, authentication, authorisation and logging. An extensive identification and authentication system for both patients and healthcare providers, and 'Well-Managed Healthcare System' (GBZ) criteria ensure the systematic and secure storage of medical data.

As the core of medical applications, the Netherlands has its sights set on a national Electronic Health Record (EPD): a secure environment in which client/patient data stored in different systems can be retrieved, exchanged and cogently shown to authorised healthcare providers to support the healthcare processes. This 'virtual' EPD is compiled from a collection of applications connected to the national AORTA infrastructure. The Netherlands is gradually moving towards a fully-fledged EPD. An Electronic Medication Record (EMD) and an Electronic General Practitioner's Record (WDH) will be introduced first, but many more care applications are also being developed.

The expectation is that good use of ICT will contribute to the quality, effectiveness and accessibility of healthcare, now and in the future. In fact, to even ensure the continued existence of an efficient health care system, ICT usage is inevitable. In particular, medical staff will be better enabled to provide the required care through improved access to accurate and up-to-date data on patients.

ELECTRONIC MEDICATION RECORD (EMD):

The Electronic Medication Record gives healthcare providers insight, accessible via their own information system, into the medication history of specific patients. This information stays at the source (e.g. information system of a hospital, pharmacy, GP practice) but is available to providers and prescribers of medication: public pharmacies, hospital pharmacies, GP practices, locum posts, hospitals, mental health institutions, and residential care and nursing homes.

ELECTRONIC GENERAL PRACTITIONER'S RECORD (WDH):

The GP shortage, an ageing population, an ageing professional group, plus the fact that many of the newly qualified GPs prefer to work part-time have precipitated the emergence of locum posts in recent years. At the moment the GPs who stand in for their colleagues in the evenings and weekends typically have hardly any access to the medical history of the patients. An Electronic General Practitioner's Record will provide the locum with a summary of the patient's history. The records will remain with the regular GP and will only be accessible to a locum. Information gained during the consultation is automatically relayed to the regular GP in the form of a locum report. The information appears on the screen of the GP, who checks it and adds it to the records at the touch of a button.

Implementation perspective

In the EMD/WDH implementation programme the components of the basic infrastructure and the first two applications come together. To ensure optimal care and attention the implementation process has been split into two phases:

Netherlands

①PROOF OF CONCEPT (POC):

The first step is to ensure that the different components will operate in concert in a test environment. The implementation of the Electronic Medication Record and the Electronic General Practitioner's Record therefore commences with a 'Proof of Concept' (PoC). In the PoC all the constituents of the chain are tested in concert under laboratory conditions. This will show whether the national facilities are working effectively and whether the tested healthcare systems are operating correctly and safely in tandem with the national facilities.

② PILOTS IN SELECTED REGIONS:

Once the PoC has been successfully completed the systems of the suppliers can be implemented in the environments of the healthcare providers. In this second phase the results from the PoC are introduced in eleven selected regions. Five EMD and six WDH pilot regions have been selected for this trial and will receive active assistance in their introduction of one or both applications. Together, these pilot regions cover 1,000 healthcare providers and approximately two million records.

If both phases prove successful the national roll-out begins early in 2007.

Future activities

Most of the ICT implementation agenda for the coming period is still to be determined. The introduction of new applications will be prioritised based on the technological possibilities and the needs and wishes of the patients, the healthcare providers and the insurers. This is being done via a two-pronged administrative model in which an 'IT and Innovation Platform' group sets the agenda for new ICT activities and an 'IT and Innovation Steering Committee', decides on the actual future developments and the sequence in which they will be implemented.

In the next few years, various 'chapters' will be added to the EPD, which will thereby be extended to other profes-

sional groups and domains (e.g. welfare, juvenile care). This step-by-step approach should eventually lead to an umbrella collection of exchangeable data for all the healthcare providers. The following initiatives (among others) will be launched in the near future:

- Extend the EMD by adding electronic prescription functions for healthcare providers,
- Extend the EMD to other professional groups,
- Extend the WDH with an emergency data set,
- Develop the components for an electronic diabetes record (integrating the complex chain of healthcare providers), among others, a self-management tool which gives patients access to their own diabetes data,
- Develop an Electronic Child's Record (EKD). From 1 January 2007 every child born in the Netherlands will each have their own EKD, containing information on the child, the family situation and the environment. The records will be administered by doctors and nurses in the juvenile healthcare sector,
- Create conditions whereby patients get electronic access to their own record. At the moment policymakers are considering the possible use of an electronic National Identity Card as a means of patient access.

Core resources

ICT in Dutch Healthcare
http://www.minvws.nl/images/ict-in-nl_tcm20-108136.pdf
Ministry of Health, Welfare and Sport
www.minvws.nl
Nationaal ICT Instituut in de Zorg
www.nictiz.nl
UZI-Register
www.uzi-register.nl

Poland

Strategic perspective

The role and involvement of specific ministries in eHealth activities in Poland has changed in recent years. However, the Ministry of Health maintains a leading role in the process of developing eHealth objectives and implementation plans. The Centre for Healthcare Information Systems, a unit supervised by the Ministry of Health, specifically focuses on the provision of solutions to challenges related to health information and eHealth.

The strategies for eHealth prepared by the Ministry of Health are usually part of the broader strategies focused on development of the information society in Poland. In 2004, the Ministry of Health issued an internal document called "Poland – eHealth Strategy for 2004 – 2006". Furthermore, in March 2005 a "Strategy of information infrastructure development in health care and introduction of the European Health Insurance Card" was prepared as supporting information for the Minister of Health. The issue of eHealth was also included in the national programme of development accepted by the Polish Government in December 2005.

Polish legislation addresses the issues of data protection, telecommunication, digital signatures and Health-IT product liability through relevant acts and regulations.

Implementation perspective

eHealth-related initiatives were conducted even before the preparation of the eHealth Strategy document. However, the implementation activities were intensified after December 2004 in areas where the strategy indicated the continuation of relevant activities in the years 2004 – 2006.

The current eHealth implementation priorities are:
- develop the information technology infrastructure in healthcare institutions; e.g. interoperability of IT solutions in healthcare facilities, introduction of a system of electronic communication between healthcare facilities called ZOZMAIL in the framework of the program "Internet in every health-care institution",
- establish the central data bases and registers needed for the healthcare system,
- improve access to healthcare information (web portals, electronic communication in healthcare, monitoring system of waiting list, electronic patient registration),
- accelerate, track and publish availability of telemedicine services,
- increase health-related education and promotion,
- ensure safety and security of medical data.

Initiatives conducted before the 2004 policy documents on eHealth have had important positive impacts on the environment for electronic services in healthcare. A World Bank project completed in 2001 focused on the development of an information infrastructure in Polish hospitals as well as on creating the grounds for hospital information systems. Earlier, during 1999 – 2001, the Silesia Voivodship developed a registry of health services based on the use of electronic health insurance cards. The main partners involved in this project were the regional

Poland

branch of the Health Insurance Fund, healthcare providers, and IT providers. This system has since been fully operational for several years.

The progress in telemedicine and eHealth is maintained by competency centres which are determined to develop interdisciplinary cooperation. The leading Polish telemedicine centres include the International Centre of Hearing Disorders in Kajetany, the Institute of Cardiology in Anin, the Poznan Supercomputing and Networking Centre, the Krakow Centre of Telemedicine and the Malopolska Centre of Advanced Technologies. Furthermore, regional initiatives resulted in the establishment of the Telemedicine Network in Kujawsko-Pomorskie Voivodship and the Lower Silesia eHealth Network.

An example of an initiative focused on a particularly well-defined medical condition which is currently being supported by eHealth applications is the Polish Network of Severe Asthma.

Health-related information is available on numerous business-to-consumer type portals addressing their services to all citizens, patients or health professionals as well as on official websites maintained by the Ministry of Health and the National Health Fund.

Future activities

Poland plans to build on the activities outlined in the "Strategy for Development of Information Infrastructure in Poland – ePoland". The Centre of Healthcare Information Systems is proceeding with priority activities related to interoperability issues and the development of registries of health service providers, pharmacies, and other organisations. The Ministry of Health and the National Health Fund have released plans for the construction of a health information infrastructure with elements of life-long health records that enables electronic interactions between all parties involved in the health market. The recognition of the importance of a legal environment that supports the provision of eHealth services has also recently triggered government initiatives focused on the early preparation of relevant regulations.

Core resources

http://www.mz.gov.pl/
http://www.csioz.gov.pl/
http://www.zoz.org.pl/
http://www.rejestrzoz.gov.pl/RZOZ/
http://www.nfz-katowice.pl/
http://www.kpsi.pl/index.php/
http://www.e-zdrowie.dczt.wroc.pl/
http://www.astma.med.pl/
http://www.nfz.gov.pl/

Portugal

Strategic perspective

In Portugal, the Ministry of Health is the main organisation responsible for promoting the use of ICT in healthcare, and for the associated planning, financing and guidance mechanisms.

The National Health Plan defines the guiding principles by which institutions within the Ministry of Health, other bodies in the health sector (state, private and social welfare institutions) and other relevant sectors can assure, or contribute to, the achievement of health gains between 2004 and 2010.

The primary areas targeted for improvement are: technical assistance, hospital access network, use of information technologies and communication, quality certification, the creation and upgrading of health centres, and the modernisation of hospital services.

eHealth is a national priority in the National Action Plan for Information Society. The main objective is to use ICT to place the citizen at the centre of the health system, while increasing the quality of the services provided, increasing the efficiency of the system and reducing costs. The eHealth policy has three action lines with the following objectives:

- Health information networks: Improve the backbone communications infrastructure of the health sector. Encourage the use of this backbone to introduce new added-value services and improve information exchange between health service providers.
- Online health services: Improve communication between patients and doctors. For example, use new applications based on Internet and mobile services to assist continuous monitoring of some chronic illnesses (diabetes, high blood pressure, obesity, drug dependency), support medication and treatment follow-up, and support the patient's family.
- User card for patients: Introduce patient cards to provide more efficient and effective personalised patient care.

Besides the national personal data protection law, the clinician practice guidelines, and the publicity and medicines marketing guidelines, there is no separate legal framework for eHealth or telemedicine practice.

Implementation perspective

There are a number of eHealth portals and other initiatives regarding the development of eHealth services. Some of these are:

- Health portals provided by public and private organisations mainly aim to inform the Portuguese population. The governmental portals from the Ministry of Health and the General Directorate of Health provide information about hospitals, health care public centres, rights of patients, national health plan, health diagnosis, diseases and health prevention, nutrition and fitness.
- Telephone help-lines that provide information, advice and guidance on medical matters, e.g. "poisonings line", "Health 24", "Public Health line".
- The NHS Patient card is based on the principle of "one patient – one number" which uniquely identifies each Portuguese for health services purposes. It was introduced in 1997 as a national mandatory project and since then every Portuguese has a patient card.
- Telematic solutions: There are several pilots across the country on telediagnosis, telemedicine and teleconference, mainly in cardiology, neurology and genetics.
- Health information network improvements are being implemented in order to guarantee better connectivity between healthcare professionals.
- Since 2004, hospital, and over 60% of health centres, have implemented clinical support applications. These include support for activities such as prescribing, diagnosis register, remote specialised outpatient scheduling, registration of the analysis results produced by other hospital applications, and certificates of temporary incapacity for work. Standard protocols allow direct access to this patient information from the connected organisations.

Portugal

- During 2006, a certification process was introduced for ePrescription applications used by private physicians and other institutions which enables their integration into the national ePrescription flow. The electronic prescriptions are sent to a central national database for invoice checking and payment. This system does not yet include the pharmacies.

Future activities

The National Data Centre, including the NHS patient database, will aggregate information located in several distributed databases at local, regional and national levels. Commencing in January 2007, this will initially deal only with the National Patient Identification and information on temporary incapacity for work, for use by the Social Security Ministry.

In order to guarantee that all institutions have high bandwidth access to exchange content, applications and services without limitations, the Health Information Networks improvements will continue to promote telemedicine initiatives especially in the countryside regions and for applications in emergency care linking ambulances to hospitals.

There will be a comprehensive implementation of ePrescription functionalities.

Family Health Units (USF) will be established which will work under the supervision of health centres. These units will be based on a new primary health care providers management model that is supported by ICT and that uses a set of indicators for evaluating the health care provided and the unit performance.
The emergency services of the National Emergency Network will be enhanced by implementation of a computerised selection and information system.

It is foreseen that a system for automatic scheduling of initial specialised consultations, based on clinical priority, will be implemented in all hospitals and health centres in 2007.

The Portuguese electronic identity card (eID) will, starting in January 2007, ultimately replace five presently existing cards: personal identity card, taxpayer's card, social security card, voter's card and health system card. The eID is a smart card that provides increased security and electronic identity authentication based on biometrics (photo and finger print) and electronic signatures.

Specific studies on booking of medical appointments by SMS and on the introduction of Electronic Health Records are also envisaged.

Romania

Strategic perspectives

The guiding principle of the future eHealth system in Romania is focused on interoperability of the information systems of the Ministry of Public Health (and its components at central and district levels) with those of the public and private health insurance, of the health care providers and other stakeholders. The recent eHealth strategy proposed for Romania, elaborated in 2005 with the contribution of all the main stakeholders, proposes a general framework strategy, to be observed by all "local level" health information strategies. It includes the following goals among its main provisions:

- develop an integrated, unique, patient oriented health information system, including an electronic patient record;
- adopt as a unique identifier the existing 13 digit ID number currently available and defined for all Romanian citizens, patients, physicians, and pharmacists;
- assure the interoperability of the existing health information systems and databases, as well as of the projects in progress;
- offer real time decision support tools both in the medical and economic fields.

Other aims are to use a unique, rigorous dictionary of clinical terms in clinical communications and electronic healthcare records; to ensure the same common position across all health services toward national (government, NCS) and international (e.g., WHO, EU) recommendations and IT strategies; to establish permanent data exchange mechanisms and processes; and to avoid unnecessary duplication or gaps in data collection. It is also envisaged that a smart card (i.e. chip card) will be issued for each person, identifying patients and health care providers, and that such patient cards will contain minimum personal and health data, for use in emergencies. The possibility of including this data on the proposed citizen's electronic identity card was also identified and will be taken into consideration at the appropriate time.

The Health Reform Law 95/2006 requires the Ministry of Public Health to establish an integrated information system for public health management. Other eHealth provisions in the same law relate to requirements for information on communicable diseases, emergency care, community assistance, hospital records, and recognition of national Romanian health insurance cards and other similar foreign cards. The Minister of Public Health further announced in September 2006 that a comprehensive survey will collect health information on all citizens, and the results will be stored in a database before the end of 2008.

Implementation perspective

Romanian healthcare practice has experience in hospital and general practitioner information systems, including computerised health records and patient identification. For example, 75% of the hospitals have already introduced IT procedures in clinical or para-clinical departments. Among these systems, electronic health records are generally well integrated with the laboratory, pharma-

Romania

cy, image processing and the like. All public hospitals use the same software for Diagnosis Related Group (DRG) based minimal datasets of patients. Some applications in telemedicine, used in many cities, are also running computerised information systems for emergency healthcare. National databases of, e.g., healthcare professionals, healthcare units, and endowment are operating since the mid-seventies. There are also national registers for some chronic diseases.

The Centre for Health Computing and Statistics (CHCS) is responsible for the health coding and statistics (in accordance with WHO, EU etc.), and carries out reporting to the WHO and other organisations. It has helped to coordinate Romanian healthcare sector IT policy and is now being restructured as a "National Centre for Organising and Ensuring the Health Information System".

Several other eHealth related projects are in progress, including:
- implementation of a management information system for the Public Health Insurance Fund, oriented mainly to the verification of insurance status and to reimbursements;
- the ongoing National Critical Medicine Network (NCMN) for Romania;
- collaboration on eHealth interoperability and professional medical education between Italy (Veneto Region - Treviso Local Health Authority) and Romania (Banat Region – Timisoara County Hospital and Muntenia Region - Euroclinic Hospital Bucharest);
- participation from January 2007 with Italy (coordinator), Spain, Denmark, Sweden, and Belgium in the eHealth interoperability project "Health Optimum".

Future activities

The eHealth strategies, information systems and portals will be developed and implemented as part of the larger national eGovernment program. In summary, the main future targets for Romanian eHealth are:

- to draw up projects for eHealth interoperability with other European countries; a starting point could be a pilot project for emergency information systems;
- to begin the national project for patient oriented health management information system, which will include patient health record, electronic identification means, security, confidentiality, data management and message transmission;
- to establish a stakeholders' working group focused on eHealth standards, minimum electronic patient record and other prerequisites for the interoperability of the Romanian health information systems. The Centre for Health Computing and Statistics (CHCS) could be a "focal point" for such a group;
- to finalise the eHealth strategy for Romania through this stakeholders' group; which can then be formally and officially endorsed by the Ministry of Public Health.

Many other new eHealth projects have been proposed to the Ministry of Communications and IT, targeting for example: strategies, statistical reporting, critical healthcare, family medicine, ePrescription, telemedicine, health programs, laboratory, imaging, eHealth portal, broadband, GIS, resource management, ID, confidentiality, security, eProcurement. Each of these projects is intended to ensure as far as possible compliance with European interoperability requirements. Implementation of these projects is likely to depend on support from European structural funds.

Core resources

Ministry of Public Health
http://www.ms.ro/
Ministry of Communications and Information Technology:
http://mcti.ro/index.php?L=1
National House of Health Insurance
http://www.casan.ro/
Romanian Society of Medical Informatics
http://medinfo.umft.ro/rsmi/
Romanian Standards Association
http://www.asro.ro/engleza2005/default_eng.html

Slovakia

Strategic perspective

The Slovak Republic aims to become an advanced democratic, cultural, social, and economically prosperous country. A great number of changes are inevitable. These include fundamental economic reforms having massive impact on the country's healthcare system. In line with the Action plan for a European eHealth Area, step–by-step progress is being made in realisation of the potential of information and communication technologies in eHealth.
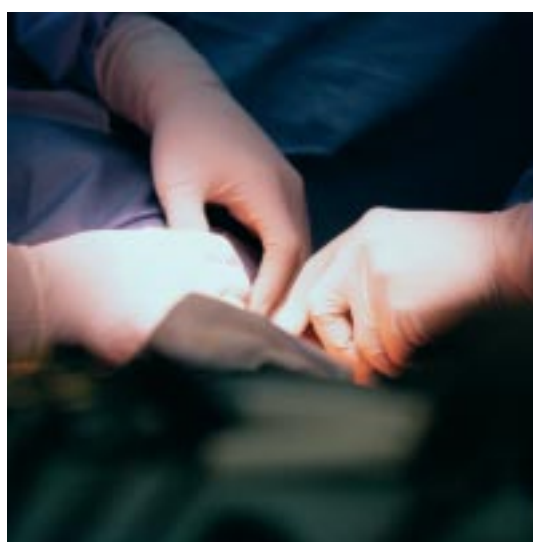
The Ministry of Health – as the principal eHealth stakeholder – initiated the "New Healthcare System" program in which it has interpreted, among others, the European eHealth visions, programs and action plans in the context of the Slovakian economy and society. The Ministry has since established specific provisions for launching eHealth progression and implementation programs in the Slovak Republic:

- the eHealth Roadmap and Action Plan for 2006 was approved (02/2006);
- the National Health Information Centre (NHIC) was appointed to serve as the eHealth related 'think-tank' for the Ministry and as the national coordinator for developing and suggesting eHealth related strategies, concepts, standards, programs, and projects;
- eHealth related NHIC activities are being supervised by the Ministry of Health via its newly established eHealth Committee;
- NHIC's eHealth Competence Centre is assigned to represent Slovakia in various EU eHealth organisational, coordination and concept developing bodies and as the liaison organisation for international cooperation.

Implementation perspective

The key infrastructure and functional components of the Slovakian National eHealth Roadmap are as follows:
- development of the National Healthcare Information System;
- healthcare related national portal for both professionals and public;
- network of national healthcare providers, with provisions for domestic and international interoperability (possibly based on HL7);
- citizen and professional electronic health/identification cards;
- Electronic Multimedia Health Record aiming at optimal clinical pathways deployment (SNOMED-CT nomenclature is under consideration; together with an ontology backed concept representation);
- telemedicine and independent living;
- ePrescription/Medication aiming at DSS employment and maintenance of patient medication records history;
- ICT supported home - health and social - care systems;
- knowledge based advisory and decision support (expert) systems for GPs, clinicians, and management;
- development and introduction of systems to acquire and accumulate relevant high quality health related data to support disease prevention measures, and to improve information for decision support in relation to public health;

Slovakia

- introduction of systems for assessment and control of clinical practices, safety, and quality;
- certification of clinical guidelines;
- application of ICT and healthcare related standards and specifications (e.g. from CEN TC251 and ISO 215, SNOMED-CT, HISA, DICOM);
- establishment of university level education in health and medical informatics in harmony with IMIA (International Medical Informatics Association) recommendations.

The Action Plan for 2006 aims to prepare clearly specified implementation programs, steps and measures by elaborating various feasibility studies. Twelve working groups, coordinated by NHIC's eHealth Competence Centre elaborated the respective documents in close cooperation with staff from three universities; several healthcare establishments and some software houses. The outcomes, which are undergoing assessment, provide a solid basis for developing the Action Plan for year 2007. Depending on available funds, manpower, and state of preparedness, tenders for diverse eHealth projects are expected to be issued in the course of the next time period.

The eHealth Committee of the Ministry of Health has a significant say in preparation of the new action plan and refinement of the Roadmap. This important committee is composed of representatives of insurance companies, the Chamber of Physicians, the Association of Physicians, the Association of Pharmacists, the Chronic Patient Associations, the Slovak Healthcare Surveillance Authority and the Association of Software Industries. Because of this fully representative composition and structure it is confidently expected that the agreed schedule and choice of eHealth projects will represent the most needed, realistic and welcome projects to be launched in the upcoming time period.

Core resources

http://www.gov.health.sk
http:///www.nczisk.sk

Slovenia

Strategic perspective

The six health programme priorities of the Slovenian Ministry of Health are: health improvement and preventive activities; the formulation of national policies and strategies for enabling and promoting healthy lifestyles; healthcare; organisation of the healthcare system; healthcare financing and development of a model for monitoring and assessing quality in the healthcare system.

The eHealth objectives and activities are derived from the "Action plan for a European eHealth Area" and from experiences and current status of health informatics in Slovenia. The strategic goal is to exploit the use of efficient, flexible informatics to support the objectives of the national healthcare system which are to serve the needs and best interests of the citizens, healthcare professionals, healthcare organisation management, healthcare service purchasers and healthcare system administrators. It is thus intended to facilitate interlinking of existing information system islands in order to facilitate access to information and direct communication across the administrative and organisational barriers to and from both the citizens and the healthcare professionals.

In December 2005 "eHealth2010 – Strategic plan for the Slovenian health sector informatisation" was published. It has three main activity lines:
- establish the basic informatics infrastructure and define the basic health and social databases as a basis for the implementation of the national electronic health record by the end of 2007,
- inter-connect health and social information systems on the national level through the development of the national health portal, which will provide safe and reliable exchange of data between the relevant parties in the health system, will ensure eServices and transparent information to all relevant parties and could be connected to other similar systems across Europe by the end of 2010,
- establish eBusiness as a common way of work in the Slovenian health sector by the end of 2010.

In accordance with the start-up tasks in the eHealth2010 strategic plan, the National Health Informatics Council was established in June 2006 followed by establishment of the Health Informatics Standardisation Board. The Health Informatics Council is the governing body that will ensure informatics is optimally applied in support of national health system goals. The Health Informatics Standards Board is the body that will lead the establishment of informatics standards required by the Slovenian health system.

Implementation perspective

There are a number of projects ongoing and completed at the country level. The National Insurance Card System is implemented and it is the main important experience in eHealth. This Insurance Card System is based on the network of databases maintained by the Health Insurance Institute of Slovenia (HIIS). The targeted objectives are:
- to improve the quality of services provided by the Institute and by other health care service providers;
- to simplify and improve communication between the

Slovenia

Institute, the physicians and healthcare institutions,

- to reduce the number and variety of unnecessary procedures,
- to improve the security of personal data within the information processing systems,
- to reduce the burden of administrative tasks and thereby to achieve a higher efficiency of operations at the Institute and within the health care service.

A planned Card System upgrade will be accomplished in the 2007 – 2009 period. Relevant examples of projects are:

- NETC@RDS PROJECT, between (among others) Czech Republic, Italy and Slovenia to improve mobile citizens' access to trans-European health services by using advanced web-oriented applications either based on IT systems, smart cards or combining both of them. It also aims to implement and evaluate technical solutions for electronic European Health Insurance Card and for improving additional services such as the inter-European health costs clearing and billing processing.
- PRIMACOM PROJECT, collaboration between Hungary and Slovenia on exchange of medical data and experience with Italy and Denmark. It aims to supply health care professionals with systems and infrastructure which enhance communication between primary and secondary care. Another initiative is the NANSA Project, which transfers distributed software technologies for open health, healthcare, hospital and insurance systems and adopted European Standards to the CEE/NIS countries. It includes the development of a prototype application on the top of DHE middleware.

Future activities

Electronic Health Record (EHR) – 2007: Basic information infrastructure, standard dataset, implementation. National Health Information Portal – 2010: Interlinking of all healthcare stakeholders, security infrastructure, tools for communication between the citizen and the healthcare system.

Core resources

Ministry of Health
http://www.mz.gov.si/index.php?id=713&L=1
eHealth2010 – Strategic plan for the Slovenian health sector informatisation, Ministry of Health of Republic of Slovenia, December 2005
Action Plan eGovernment
http://e-uprava.gov.si/eud/e-uprava/en/
akcijski_nacrt_e-uprave_do_leta_2004_1_4.pdf
eHealth in Slovenia (Presentation Nov. 2004):
http://www.kuopio.fi/attachments.nsf/Files/
091104155400210/$FILE/Aleksandra%20Jercinovic.PPT
Health Insurance Card
http://www.zzzs.si/kzz/ang/hic_indx.htm
Netcards project
http://www.netcards-project.com

Spain

Strategic perspective

The national programme for the healthcare system in Spain is defined in the Plan for Quality in the National Health System, issued by the Ministry of Health and Consumer Affairs. This Plan has six main action areas, twelve strategies, over 40 objectives and almost 200 proposed measures for improving the quality and cross-disciplinary effectiveness of the national health system. Its implementation is being conducted through collaboration among the regional governments, the healthcare professionals, the patients and the main social organisations.

The strategic goals of the Plan for Quality include improving citizen participation in their own healthcare, increasing patient safety through improved quality of care, intensifying healthcare ICT security by continuous assessment, and increasing the use of ICT by adapting the human resources policy to the changing service needs. eHealth activities, called "Health on line", are an integral part of Plan Avanza, the Spanish eGovernment strategic plan for 2006 – 2010. The Plan Avanza was published in 2005. It aims to coordinate the policy objectives and activities of the various regions of Spain with those formulated at the European level in the strategic framework i2010 – European Information Society 2010.

Digital Public Services ("Servicios Públicos Digitales") is one of the five areas of performance identified in the Plan Avanza. This action area addresses new measures focused on improving the services of the public administrations, increasing the quality of life of the citizens and the efficiency of companies. This action line is directly relevant for eHealth. In particular healthcare professionals are specifically targeted in the dissemination activities for five projects: health identification card database, digital clinical record, ePrescription, telemedicine, tele-appointment and interoperability.

Spanish legislation addresses issues of data protection (1999) and telecommunications (2003), but does not yet cover digital signatures and telemedicine or eHealth service provision. Relevant European directives have been taken into account. The legal authorities charged with legal oversight are the Spanish Data Protection Authority (AEPD), the Ministry of Industry, Tourism and Trade, the Interior Ministry and the Ministry for Public Administration.

Implementation perspective

Implementation of the Plan for Quality started formally on 1 January 2006. In addition some pilot initiatives were undertaken in 2005 to prepare the ground.

Within the national health system framework, the regional health authorities are also developing numerous initiatives for improving their healthcare services based on use of new ICT. eHealth services such as electronic health records, medical appointments through the Internet, ePrescribing, telemedicine systems and the patient health card are therefore being implemented – to differing extents – in all Spanish Regions.

Spain

Several initiatives to ensure nationwide interoperability of health systems are being developed by the Ministry of Health. For instance, web services were introduced for the National Health System in 2003, enabling the exchange of information and the integration of the various systems of the 17 Autonomous Communities (AC) health service organisations. These web services allow the exchange of information from the database of Electronic Health Card users, programmed derivation of the amounts required to compensate for patient flows between different ACs (via a compensation system defined by the Ministry of Health and Consumption called the "Fund of Cohesion"). They will also allow the exchange of electronic prescriptions and Electronic Health Records which ultimately support increased patient mobility. The web services exchange information by XML messages, enabling independence of platforms and applications.

The Ministry of Health is also seeking a consensus among health professionals about the content of various kinds of clinical reports and clinical record summaries.

Future activities

Plan Avanza runs until 2010. Accordingly, the current eHealth activities outlined above are expected to be continued and expanded to other provinces and regions. Throughout this period, applications, data fields, and functionalities will be dynamically adapted and further improved to ensure continued focus on achieving and maintaining interoperability across the services of different Autonomous Communities.

Core resources
Plan for Quality in the National Health System:
http://www.msc.es/en/novedades/docs/PlanCalidadSNS.pdf
Plan Avanza:
http://www.planavanza.es/index.html

Sweden

Strategic perspective

eHealth solutions in Sweden were until recently developed via co-operative voluntary arrangements between national and regional authorities (counties) and without a national eHealth Strategy. The link between regional initiatives, advancing the use of IT in healthcare was entrusted to the organisation "Carelink" which was established in 2000. The members of its board of directors are representatives from municipalities, counties, the National Board of Health and Apoteket AB (Swedish Pharmacy Chain).

In 2005 the Ministry of Health and Social Affairs, the Swedish Association of Local Authorities and Regions, the National Board of Health and Welfare, the Medical Products Agency, the National Corporation of Swedish Pharmacies, and Carelink established a National High Level Group for eHealth to work towards a national eHealth strategy. This strategy was published in March 2006 and established a common vision of how eHealth should be used to support and improve healthcare. Social care is also included in the National Strategy for eHealth, and will be a focal area for the next step in the work carried out nationally.

The work to be jointly undertaken is grouped into six action areas with the following objectives:
· Bring laws and regulations into line with extended use of ICT,
· Create a common information structure,
· Create a common technical infrastructure,
· Facilitate interoperable, supportive ICT systems,
· Facilitate access to information across organisational boundaries,
· Make information and services easily accessible to citizens.

The first three are concerned with establishing better basic conditions for ICT in health and elderly care. The last three are about improving eHealth solutions and adapting these to patient needs. Education, training and research initiatives are crucial to all six areas.

The strategy entails commitments of the parties involved, and encourages the formulation of local operational strategies to guide the process and direction of change. This local focus helps the principals involved to ensure that the local measures taken can be placed in a national perspective and that ICT use will function efficiently and effectively from a strategic operational perspective.

Implementation perspective

Since 2002 all hospitals and primary care centres have been connected via Sjunet, the joint telecommunication network administered by Carelink and dedicated to health care. This network also links together county councils and regions, pharmacies and several other healthcare enterprises. Currently it connects all 80 public hospitals, 800 primary care centres, 950 pharmacies and a number of private health care institutions.

Sjunet is a fibre-optical network separate from the Internet which allows for the secure and reliable exchange of confidential data, including images. It also incorporates the possibility for video conferencing. Other features include order entry, a national phone directory, a knowledge database, clinical care planning and remote diagnostic services (some of these diagnostic services are currently in the preparatory phase). The scalability of Sjunet makes it simple to connect new institutions and organisations. Sjunet won the eEurope award for eHealth in 2003. In 2004 the Sjunet broadband infrastructure reached about 85% of the population.

Different eServices supported by Sjunet include the ePrescription system which is quickly spreading. The percentage of ePrescriptions reached 55% in April 2006. The ePrescription system is being further developed by Apoteket AB with the addition of a national database of medicines sold on prescription. Telemedicine has been tested and/or used in over 100 applications and more than 75% of hospitals have tested or are already using telemedicine applications.

Sweden

On the regional level electronic catalogues of and about service providers are being developed and linked nationally through a services address register (HSA catalogue). A secure email system is also in use in many counties.

In addition to these, several other major projects or activities were initiated and undertaken on a regional and/or national level during the last five years covering different aspects of eHealth applications and/or services. Among these are:

- An ongoing review of legislation on the handling of information in the health care sector by the Patient Data Inquiry.
- The InfoVU-project which is devising nomenclature, classifications and quality indicators to be used in care documentation. (The national Board of Health and Welfare has established a National Centre for Patient Classification Systems).
- Suitability assessment of SNOMED is being supported by the government.
- A National Patient Summary has been piloted and is being diffused into use and broadened.
- The CarelinkPLUS project has developed a reference architecture (map of interfaces to services) to enable the communication of systems in different organisations.
- The Carelink RIV project is establishing common standards for eMessages in the health care sector.
- The SITHS-project has developed secure IT authentication solutions for health care professionals.
- The National Patient Advice project has developed a Health Portal for citizens.
- e-Lak, a network led by Carelink is supporting the further development of electronic communication between the health service, care and pharmacies.

Future activities

The eHealth strategy published in 2006 is regarded as the first step in a long-term undertaking towards more cooperation on the national level. The strategy has been approved by the government and the responsibilities for following and implementing it have been assigned. Support has been gained for the strategy from county and municipal councils and other stakeholders, as has as agreement on scope, scheduling, financing and decision making in connection to the implementation of the strategy. On the basis of the discussions, the National High Level Group for eHealth will take a policy position on the planning, implementation and financing of future work on ICT issues at national level. A report is expected to be published in March 2007, on how to proceed in the focal areas. The strategy implementation plans will be followed, and problems identified during its application will be considered in further modification of the strategy. This work will be undertaken by members of the National High-Level Group for eHealth.

Core resources

National Strategy for eHealth. S2006.019,
Ministry of Health and Social Affairs, May 2006
http://www.sweden.gov.se/content/1/c6/06/43/24/f6405a1c.pdf
Plan of Activities The Swedish Government Strategy Group
on IT Policy. Ministry of Industry, Employment and
Communications, December 2005
http://www.sweden.gov.se/content/1/c6/02/24/11/167f9ce7.pdf
Sjunet -The Swedish healthcare network
http://www.itsweden.com/docfile/
31930_Sjunet_the_swedish_healthcare_network.pdf
Carelink home page
http://www.carelink.se/

United Kingdom

Health services in the United Kingdom

Each of the four constituent countries of the United Kingdom (England, Scotland, Wales, and Northern Ireland) has its own, separately administered health service. All are publicly funded and branded as the "National Health Service" (NHS) offering broadly the same range of services – it is essentially the administrative arrangements that are different. The four health services operate independently, but there is close cooperation and collaboration to ensure that all citizens receive the same quality of care.

The NHS in England is the responsibility of the Department of Health. NHS Connecting for Health is an integral agency of the Department of Health that is responsible for delivering the National Programme for IT for the NHS in England. The Department of Health is also part of the UK Government and is responsible for representing the UK internationally in health matters, liaising with the other "home countries" as appropriate.

The NHS in Wales is the responsibility of the Welsh Assembly Government. The Welsh Assembly is a devolved administration that draws its authority from the UK Parliament and has responsibility for a number of issues, including among others health. "Informing Healthcare Wales" is the National Programme for NHS Wales to develop new methods, tools and information technologies to transform health services for the people of Wales.

The NHS in Scotland is the responsibility of the Scottish Executive. Scotland has its own Parliament and Executive again formally drawing its powers from the UK Parliament, and with devolved responsibility for health and other matters. Scotland has its own eHealth strategy administered by the Scottish Executive Health Department.

The NHS in Northern Ireland is a little different from the other UK health services in that it has a combined health and social care administration. The Northern Ireland Assembly and Executive are currently suspended, but Northern Ireland retains its own distinct administration under the Northern Ireland Office of the UK Government. Health and social care in Northern Ireland comes under the Northern Ireland Government Department of Health, Social Services and Public Safety with its own eHealth strategy.

England

Strategic perspective

The UK Department of Health is responsible for the over-all eHealth policy of England. Regionally based Strategic Health Authorities are responsible for coordinating and performance managing the progress of local National Health Service (NHS) bodies. Each of the other devolved administrations of the UK (Scotland, Wales and Northern Ireland), has their own equivalent bodies.

NHS Connecting for Health is the agency of the UK Department of Health responsible for delivering the National Programme for IT (NPfIT) in England. The NPfIT, launched in 2002, is one of the largest public sector health IT projects in the world and aims to provide autho-rised access to patient information whenever and wherev-er it is needed. Its stated objective is to implement an "integrated IT infrastructure and systems for all NHS organisations in England by 2010", which enables patients to make informed health choices and which increases the efficiency and effectiveness of clinicians and other NHS staff. NPfIT aims to achieve these goals by:

- creating a NHS Care Records Service (NHS CRS) to improve the sharing of consenting patients' records across the NHS and also provide patient access to their own health records,
- making it easier and faster for general practitioners (GPs) and other primary care staff to book hospital appointments for patients,
- providing a system for electronic transmission of pre-scriptions,
- ensuring the NHS IT infrastructure can meet its cur-rent and future needs for broadband connections and network services.

Legal regulations exist in the area of data protection (1998), telecommunications (in regard to data protection and confidentiality, 2003) and digital signatures (2005). The Information Commissioner's Office has the oversee-ing authority in this regard.

Implementation perspective

Major infrastructure elements of the Programme are in place; as well as the national systems, over 12,000 local sys-tems are in place serving well over 250,000 NHS staff. While eHealth infrastructure is provided by the NPfIT, the delivery of benefits depends on the ability to integrate local NHS systems with the NPfIT infrastructure. Online dis-semination activities take place through the websites of the Department of Health and NHS Connecting for Health, and through promotion in person at public conferences. The Programme has also featured frequently in the press.

Some of the main achievements to date include:
- Electronic Transmission of Prescriptions (now the Electronic Prescription Service - EPS) was delivered by the end of December 2004 as an enhancement to the NHS Care Record Spine. After integration testing, live operations commenced on 11 February 2005 with the first compliant GP and pharmacy systems. To date over 6.5 million electronic prescriptions have been issues (out of a total of some 370 million prescriptions issued per year).

- More than 1.3 million hospital appointments have now been booked electronically at a rate of 10,000 a day and rising accounting for over 20% of NHS referrals for treatment.
- The Picture Archiving and Communication Systems (PACS) went live in 2005 with the first images being transferred through the network in March of that year. 56 new Picture Archiving and Communications Systems (PACS) systems are now live and more than 80 million digital images have been stored, benefitting over 3 million patients per year.
- Implementation of the New National Network (N3) began in April 2004. When complete the NHS network will be one of the largest Virtual Private Networks (VPN) in the world. More than 15,000 NHS locations are connected already. All NHS sites are planned to be connected by March 2007.

Success has been measured by NHS Connecting for Health deployment statistics, which show as of 6 November 2006:
- 287,713 users registered for access to the Spine
- 6,554,406 prescriptions transmitted using the EPS
- 1,607,267 Choose and Book bookings
- 83,858,413 images stored using PACS
- 15,894 National Network (N3) connections
- 210,777 registered NHSmail users

The initial components that went live in July 2004 included:
- the Personal Demographic Service (PDS) containing identity details of over 48 million patients,
- the Messaging Service (TMS) handling 220 million messages on an annualised basis,
- access controls to ensure that only authorised access points and authorised personnel can connect to the live services,
- the Choose and Book facility to allow GP Practices to book appointments for their patients at particular hospitals.

Future activities

Healthcare reform is high on the policy agenda, and eHealth activities are recognised as a key necessary component. However, the goal to provide an integrated IT infrastructure and systems for all NHS organisations in England by 2010 continues to present significant challenges. The National Programme for IT is a large, complex programme within the NHS, one of the world's largest organisations, itself undergoing radical change to deliver better healthcare for people. A key challenge is to introduce modern information technology and the business changes necessary to exploit it fully without impacting the safe delivery of care. The Programme has set ambitious and challenging targets to deliver systems to provide defined benefits and believes it is better that there should be delay to implementation of a system to get it right for patients and clinicians, rather than to deploy it rapidly and get it wrong. Significant focus is also being placed on ensuring that the NHS organisations can and do play a full part in implementing the programme system and can make the best use of the programme's systems to improve services.

Extensive information about the National Programme's implementation plans are available online at http://www.connectingforhealth.nhs.uk/implementation.

Northern Ireland

Strategic perspective

In Northern Ireland the Department of Health, Social Services and Public Safety (DHSSPS) is responsible for overall Health and Social Services policy. Health and Personal Social Services in Northern Ireland are provided as an integrated service. Northern Ireland is currently reforming its public body structures under what is known as the Reform of Public Administration which will result in a single Health and Social Services Authority.

Specifically, the way forward in eHealth and Social Services was determined, agreed and declared in the DHSSPS Health and Personal Social Services Information and Communications Technology Strategy, published in March 2005. The Strategy has two major, interlocking themes for ICT development: Electronic Care Records and Electronic Care Communications. The emphasis of the strategy is on these two themes, but the importance of ICT as a means to access other information and the need to sustain and modernise ICT in other areas is also recognised.

Implementation perspective

Some work is well underway regionally to select specific systems that will support clinical services across Northern Ireland including Picture Archive and Communication System (PACS), theatre services, pharmacy/prescribing and laboratory services. The local solutions do not interfere with the objective for regional solutions, best value and affordability through procurement processes. Other specific project activities include:

- All GP practices in Northern Ireland are now connected to the secure GP network, and most practices have access to a managed e-mail and internet service and to the new electronic pathology results service. During 2006/07, GP systems will be populated with the new Health + Care Number and will be connected to the Electronic Registration system. This will enable all new GP registrations and all changes to patient demographic information to be transferred electronically between the Central Services Agency and GP practices. The introduction of this new personal identifier across the HPSS will speed up the referral process and will help reduce administration costs. It is also a necessary prerequisite for beginning to build service-wide electronic patient records.

- An Electronic Prescribing and Eligibility System (EPES) is being rolled out over the next two years. Paper prescriptions will be printed at the GP's surgery with a two-dimensional barcode that encodes all of the prescription information. At the Community Pharmacy the 2D barcode is scanned and all of the "prescribed" information (including doctor, surgery and patient details) is captured by the pharmacist on to their system. When the pharmacist confirms what they will and have dispensed, any changes are recorded as "dispensed" information. The full record of the transaction (prescribed information, details of the patient and their method of payment or claim for free prescriptions) is sent by the Community Pharmacist to the central EPES database and used to support their claim for payment of services rendered and check the validity of the patient's claim.

Electronic Care Record: The electronic care record will contain structured data, text and images generated from a variety of sources and accessible wherever and whenever there is a legitimate need to access it. Access will be managed under a strict "need-to-know" regime that complies with agreed rules and procedures for confidentiality and consent. To create an electronic care record, it is necessary for the data to be read in an electronic format, typically through the use of ICT at an operational level. At present, for example, there are elements of electronic care records that are held in ICT systems in various different locations: general practice systems; community systems, with more extensive coverage anticipated through introduction of new Person-centred Community Information Services; and hospital systems – such as patient administration, clinical specialties, pathology, radiology, accident and emergency, and others.

The scale of the Health and Personal Social Services (HPSS) and the use of common systems offer opportunities for an innovative approach to electronic care records. In effect, the combination of developing care records within all organisations, increasing use of HPSS-wide specialist systems, consolidation of ICT, a single Health and Care Number, and the use of common systems, creates a virtual electronic care record.

Electronic Care Communications: Health and social care processes are familiar to all healthcare professionals who are service users. Almost every contact with the HPSS involves communication between healthcare professionals, between functions, between HPSS organisations, or with other public and private sector bodies. Examples of such contact include: appointments; referrals between care professionals; requests for services and communication of the service outcome; discharge letters and other follow-up communications; and prescribing.

Current ICT systems manage some aspects of these processes, but in most cases only within individual organisations. As a result, communication of care information in the HPSS today relies on paper. For there to be a shift from paper to electronic communication, more widespread access to ICT is required, and capabilities - that in some cases exist already - need to be made simpler to use and seamless for the user.

Current and future activities

Launched on 9 March 2005, the HPSS ICT Programme identifies, initiates and monitors initiatives and individual projects to achieve the vision set out in the ICT Strategy. In Northern Ireland, Health ICT projects are currently underway in relation to, among others:

- Health and Care Number (HCN)
- Electronic Prescribing and Eligibility System (EPES)
- Person-centred Community Information System (PCIS)
- ICT Training for all healthcare professionals
- Server Consolidation – towards the Electronic Care Record (ECR)
- Regional Laboratory ICT Modernisation
- Public Sector Broadband Aggregation
- Secure remote access
- Infrastructure Strategy
- HPSS Data Warehouse

Core resources

Department of Health, Social Services and Public Safety (HPSS), Information and Communication Technology Strategy
http://www.dhsspsni.gov.uk/ict-strategy.pdf
HPSS ICT Programme Summary
http://www.dhsspsni.gov.uk/hpss-ict-programme-summary.pdf
Department of Health, Social Services and Public Safety website
http://www.dhsspsni.gov.uk/index/hss/rpa-home.htm

Scotland

Strategic perspective

The Scottish Executive Health Department is responsible for overall health policy in Scotland. Its main strategy policy document, Delivering for Health, identifies the need for Scotland to shift from its current reactive crisis-management and acute-oriented care mode towards more anticipatory, preventative and continuous care. The strategy aimed at establishing such a comprehensive change in service is built around the practical application of Electronic Health Records (EHR) as a key component of the health information system.

In particular the eHealth strategy aims to achieve convergence over the next five years towards common and mandatory arrangement of IT systems across NHS Scotland which deliver the following:

· personal EHRs ultimately replace paper based records;
· each patient has secure access to their individual EHR;
· health service treatment staff, across the whole NHS, also have access to the EHR of their patients;
· all healthcare professionals are connected to a secure health information network, which supports an integrated community of acute and inter-agency healthcare service providers;
· the confidentiality of patient information is maintained, while fully supporting integrated healthcare services through sharing of patient information;
· the data sharing, required for Community Health Partnership between the healthcare service and its partners, is based on a framework of informed patient consent;
· information systems directly support the three core functions of quality service provision: a) assessment of need, b) care planning and co-ordination, and c) evaluation of the quality of care;
· healthcare professionals participate in clinical networks and access best practice information;
· clinical staff record their interventions directly into Electronic Health Records, eliminating 3rd party transcription from written records.

Implementation perspective

The Scottish Executive Health Department implementation is not a "rip and replace" strategy. It is building on existing developments. Progress already achieved includes:
· Picture Archiving and Communications Systems (PACS) have started to be rolled-out in all hospitals;
· the national Emergency Care Summaries (ECS) system contains information on patients' current medication and allergies for more than 90% of Scottish population; it is also accessible to out-of-hours services staff;
· 99% of General Practitioners can access the Scottish Care Information (SCI) web-based system for laboratory test results (SCI Store);
· over 70% of referral letters, between primary and secondary care, are now sent electronically via secure national electronic transmission mechanisms (SCI Gateway); this system is fully integrated with the GPASS primary care system, enabling GPs to access SCI services on-line.

There is also an expanded NHS Scotland "e-Library" which provides access to over 4000 fulltext electronic journals, over 20 major databases, 200 electronic text-books and over 1500 free quality health information websites. It caters for the work, research, education and personal development needs of the full range of NHS staff. A single username and password, available via online registration, provides access to these resources.

Future activities

Because there is no single system that covers the Scottish eHealth strategy requirements, the Scottish Executive Health Department expects to buy a number of systems, and the tools to join them up. The first key task therefore is to set out the scope of what needs to be procured to deliver a single national comprehensive set of comple-mentary interoperable systems based on the individual EHR, that together provides (among others) the follow-ing minimum functionalities:

- the initial EHR implementation will include an elec-tronic Emergency Care Summary for every consenting patient;
- secure and managed updating facility for individual EHRs;
- Picture Archiving and Communications (PACS);
- electronic prescribing and medicines administration;
- appointment scheduling and clinic management;
- telehealth for remote access to specialist medical serv-ices and telecare for support in the home;
- GP computing, with patient databases matching resi-dents of Community Health Partnerships, to meet wider community and primary care needs.

The Scottish Executive Health Department is also estab-lishing a Scottish Centre for Telehealth. The Centre will provide practical help to NHS Boards as they seek to realise the potential of telehealth development projects.

Core resources
Delivering for Health
http://www.scotland.gov.uk/Resource/Doc/76169/0018996.pdf
Building a health service fit for the future
http://www.sehd.scot.nhs.uk/nationalframework/Reports.htm
Scottish Care Information:
http://www.sci.scot.nhs.uk/index.htm
NHS Scotland e-Library:
http://www.elib.scot.nhs.uk/portal/elib/pages/index.aspx
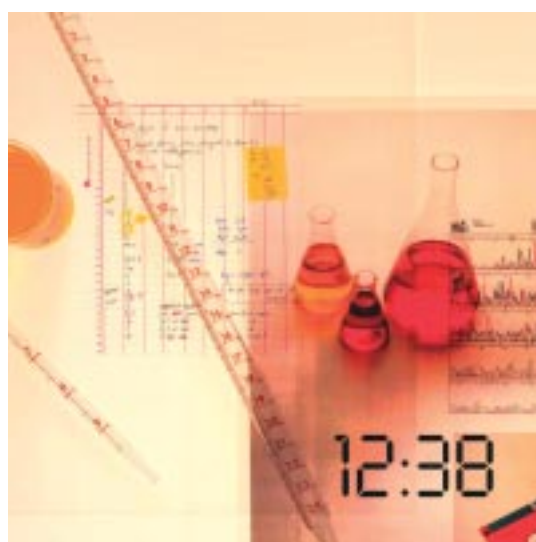
Wales

Strategic perspective

In Wales the Welsh Assembly Government is responsible for the overall health policy of Wales, including eHealth issues, as a devolved government within the UK. The Welsh Assembly Government has established several programmes of work to support health policy, and the one with the main involvement in eHealth is Informing Healthcare. This is based on a strategy document published in 2003, and an organisation also called Informing Healthcare has been established to deliver the strategy.

The overall operation of the Informing Healthcare Programme is described in its National Case, published on the website and updated regularly. Its primary purpose is to create a set of information and infrastructure services that enable the provision of integrated, person-based information to be used to join up and improve patient care across the National Health Service (NHS) and social care in Wales. Its strategic aims are to develop the information infrastructure to ensure the NHS in Wales can provide patient care that is continuous and integrated, closer to a patient's home and well co-ordinated. The purpose and aims have been expressed as the following investment objectives:
- Make a shared view of clinical care available across NHS Wales.
- Support and co-ordinate the re-design of working practices to deliver the full benefits of Informing Healthcare.
- Create a "world-class" technical infrastructure so that information can be shared securely irrespective of organisational boundaries.

A key part of the Programme's activity is the engagement of clinical and other professionals. This takes several forms, including workshops and other events that take place across Wales. In addition, as part of the governance arrangements, a National Architecture Design Board has been established. This is a group of experts in health care and ICT design who are brought together to make the collective decisions that are needed to make information systems and services work consistently across the whole service to support individual care.

Implementation perspective

The Informing Healthcare Programme has designed a national architecture which defines the environment for the future provision of the information services in NHS Wales that are directly related to healthcare. It sets out principles and concepts, establishing the architectural context in which information systems and services can be developed to support effective healthcare in Wales. The major elements from this architecture will be:
- An Individual Health Record for each person in Wales, which will make available information of most importance to the overall care of the individual.
- A range of care management information services following a strategy which aims to get from the current diversity of information systems and processes across Wales to a more corporate arrangement that can meet the requirements of current and future health care services, which will increasingly operate across institutional boundaries.

These elements will be delivered via a service oriented architecture which focuses on what the information technology does (service) rather than how it is put together (system). This will facilitate communication between organisations, and will provide common services for communication with other countries.

Two key principles of the Informing Healthcare Programme are to develop incrementally and to build on existing assets as much as possible. The Programme is therefore running several service improvement projects, which aim to explore different aspects of functionality, learn lessons for full implementation and deployment, but also deliver immediate benefits for patients and care professionals. These include:

- A pilot service for out-of-hours services which will provide information not currently available, as the first step towards the Individual Health Record.
- A pilot patient portal, My Health On-Line, available in English and Welsh.
- Projects to explore the electronic transfer of clinical communications.
- Projects for the monitoring of patients in their home.

In addition, Informing Healthcare has provided major investment in improving network facilities and increasing access to IT facilities, supported ECDL training, and provided more comprehensive electronic sources of information (e.g. journals).

Future activities

One of the major activities currently being undertaken is to establish one or more strategic partnerships with suppliers, to assist in the procurement, development, delivery and operation of information services.

The service improvement projects described in the previous section will continue, and it is likely that more will be identified. In addition, the following major activities will be undertaken in conjunction with the strategic partners:

- Roll-out of the out-of-hours pilot to an information service for all areas of emergency care.
- Development of the Foundation Phase of the CMIS strategy, which will make available a shared view of patient information within organisations and provide electronic support for some clinical activities not currently available.
- Put in place mechanisms to share information with other UK home countries, the Republic of Ireland and beyond to support cross-border healthcare.

Core resources

http://www.wales.gov.uk/
http://www.wales.nhs.uk/ihc/
NHS Wales, Informing Healthcare
http://www.wales.nhs.uk/ihc/documents/ihc_a5-e.pdf

2

FURTHER COUNTRIES REPRESENTED IN THE I2010 SUBGROUP ON EHEALTH

Iceland

Strategic perspectives

Iceland has 44 healthcare centres, ten regional hospitals and one university hospital serving a population of 300,000 inhabitants. Its eHealth challenges are therefore not on the same scale as those of larger countries with more complex organisation and regional variations. However, the main goals of the eGovernment Information Society 2004 – 2007 strategy for use of information technology in all sectors, including healthcare, are similar to those of other countries in Europe, i.e. ensure the following:

❶ individuals and organisations have increased opportunities for exchanging and seeking knowledge, communicating and conducting business, wherever and whenever they wish;

❷ all citizens benefit and individual diversity is respected;

❸ access is assured to a secure, reliable, high-speed network at competitive prices;

❹ added quality of life and a richer society are supported by realising the potential of information technology in community sectors such as education, culture and health.

THE SPECIFIC GOALS FOR THE HEALTHCARE SECTOR INCLUDE THE FOLLOWING:

- establish a Healthnet to link all institutions within the sector;
- introduce electronic patient records for all healthcare services, whether in hospitals, health care centres or among independent healthcare operators;
- enable electronic transactions between the State Social Security Institute, healthcare workers and the public.

The Ministry of Health and Social Security is the co-ordinator for projects in the Healthnet programme. The security of information and the protection of personal privacy are guiding principles in developing Iceland's information society. eHealth applications are directly affected by legislation in the various fields of organising the health system and legislation on data protection.

Implementation perspective

Since 1996, telemedicine projects have been conducted across 13 locations, in remote medical consultations and in various clinical specialties, including: teleradiology, teleobstetrics, telepsychiatry, maritime telemedicine, telemedicine in surgery and telepathology.

Many eHealth communities use secure communications in individual pilot projects to work with applications and connect to services over the Internet. An action plan to achieve a secure national Healthnet was established in 2000. The national Healthnet communications hub required to simplify the communication between organisations will be operational at the beginning of 2007. This will then link healthcare institutions and enable telemedicine, message transfer and other eHealth processes.

The Ministry of Health and Social Security published minimum datasets for electronic health record (EHR) systems and communication between systems in 2001. Although all primary care centres have EHR and use the same system, these are not connected to each other. Nonetheless, use of the same system for electronic health records in all health care institutions simplifies integration work and measures have been taken to streamline the use of these systems. For example, EHR systems in small healthcare units have been brought together in connection with merging of healthcare centres. The two largest hospitals use the same systems for general primary care patient information and use special systems for activities such as laboratory tests, surgery, Picture Archiving and Communication Systems (PACS) and Radiology Information Systems (RIS). The small hospitals have not come as far; they mostly have different legacy systems for out-patient services and even older systems for in-patient information.

An electronic prescriptions pilot project has been operational for several years in part of the country and nationwide implementation is planned for 2007. Using this system, doctors and specialists in healthcare centres and

Iceland

hospitals can send prescriptions to any pharmacy in the country. Since 2000, all prescriptions are also sent electronically from pharmacies to the State Social Security Institute. Since 2005, these prescriptions have been entered into a prescription database which is used by the Directorate of Health to control prescriptions and the use of particular drugs.

A pilot for implementation of digital ID for healthcare workers commenced in 2006, and will finish in 2007. Currently individual unique social security numbers are used as the patient identifier. Pilots have been made on the use of barcodes for registration of patient data. A digital ID for the public (patients, clients) will be introduced soon.

A national database for vaccinations was piloted in 2005. The database is located at the Directorate of Health. The Electronic Patient Record (EPR) systems send information to the database and the EPR can look up particular vaccination information from the database. A nationwide rollout is planned for 2006 – 2007. If this technology is viable, the same technical database solution may be expanded to other medical applications. Interestingly, this is not the first such national database. Early in 1998, the central health sector database legislative bill stipulated that all health information produced when physicians communicate with any of the country's patients should be entered in a single database. A year later DeCode Genetics was granted a twelve-year exclusive right to operate the database. However, the establishment of this database proved to be very complicated and it has not yet been implemented. It also stimulated significant national and international debate.

Future activities

The objective of using eHealth to improve the structure of the healthcare system and enhance the quality of healthcare services continues. The primary infrastructure requirement is the finalisation of the Icelandic Healthnet as the communication platform for eHealth. In line with the thematic structure of the 6th Framework Programme, Iceland plans to develop elements of technology platforms and networks to support the following eHealth related themes into the 7th Framework Programme:

- Development of processing and protection technologies for image analysis and scientific data exchange, and for adaptation of social, economic, health and education services, e.g. eHealth and eLearning, and production and information systems.
- Tools and methodologies to improve participative democracy and governance in a knowledge based society.
- Continued development of technologies by which nations can enhance their internal security against illegal traffic, crime and terrorist threats.

Core resources

Thorgeir Palsson, Margret Valdimarsdottir: Review on the state of telemedicine and eHealth in Iceland. International Journal of Circumpolar Health, 63:4, 2004
http://ijch.oulu.fi/issues/634/634_Palsson.pdf
Jon Snaedal The ethics of health sector databases. eHealth International, 1:6, 2002.
The Icelandic National Health Plan to the year 2010
http://www.heilbrigdisraduneyti.is/media/Skyrslur/
heilbenska5mai.pdf.

Liechtenstein

Strategic perspectives

Liechtenstein realises that the eHealth market is developing dynamically and that no health system can ignore its potential. However, policy strategists recognise that, being a small country, Liechtenstein cannot be a pioneer in eHealth. Therefore the national strategy is to, firstly, consider existing solutions, predominantly those from the neighbouring country of Switzerland and secondly, be consistent with EU guidelines – particularly those relating to cross-border health insurance. Further important strategic issues to be met include:

· Inclusion of all principal stakeholders in eHealth development, above all general practitioners, dentists and laboratories.
· Taking data security very seriously – data sovereignty has always to be with the patient.
· Stepwise introduction of eHealth solutions, thereby minimising the risk of bad investments.

However, this is an implicit strategy. The Government Programme for 2005 – 2009, published on 13 January 2006, includes a chapter about health but does not refer to eHealth issues.
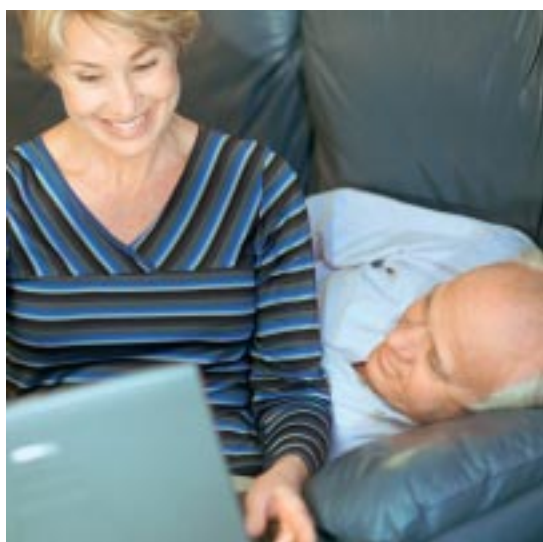
Implementation perspective

eHealth implementation in Liechtenstein, summarised as the realisation of an "electronic health network" (elektronisches Gesundheitsnetz – eGN) mainly comprises three items: the introduction of an insurance card with single unique patient numbers, electronic accounting of health services and secure communication via eMail. Conceptual work started in spring 2003 and implementation began in spring 2004. Today, the eGN connects more than 50% of the medical practices, the national hospital, the Offices for Personnel and Organisation as well as for Social Services, and the laboratory Risch.

Furthermore, the Swiss Tarmed tariff system is being introduced nationally.
Widescale implementation of the electronic European Health Insurance Card (EHIC) is a priority. Seeking to commence adoption of an electronic health card, Liechtenstein is a member of the European NETC@RDS project that aims at the electronification of the EHIC.

Future activities

The Liechtenstein insurance card is planned to be extended to a health card that contains emergency data such as blood group, allergies and vaccinations. The Government plans to switch to a more extensive electronic health card system as soon as sufficient experience from other countries are available.

Core resources

eGN "Gesundheitsnetz" – brief presentation, eHealth 2006 High Level Conference and Exhibition, Malaga, 10 May 2006.
eGN status
http://hin.escapenet.ch/news.asp?action=select&newsNO=26261&id=1557
Government Programme 2005–2009
http://www.liechtenstein.li/en/
pdf-fl-staat-regierung-regierungsprogramm05-09.pdf

Norway

Strategic perspective

The first national action plan for IT development in the health and social sectors, called "More health for each bIT", was issued by the Ministry of Health and Social Affairs in 1997. This was followed by a second plan, called "Say @h!", in 2001. "Te@mwork 2007", the latest eHealth roadmap, drafted by the Directorate for Health and Social Affairs and published in 2004, gives an outline of governmental measures to promote greater electronic interaction in the health and social sectors. The vision of Te@mwork 2007 is that patients and clients, i.e. a person using the services of a social services agency, always experience continuity of care when using the services. The fundamental idea behind the 2004 – 2007 strategy is that things will be done properly and completely in two main priority areas:

Improving the flow of information in the sector. This involves work on technical infrastructure, information structure, information security, electronic patient records, exchange of electronic messages and access to professional support.

Greater inclusion of new actors and services in electronic interaction in the sector. This involves expanding electronic interaction to ensure access to relevant information by patients, clients and relatives, and target service agencies such as pharmacies, municipal health and social services. ePrescription is the main new service.

For the period 2007 – 2010, the Ministry for Health and Care Services is responsible for a National Health Plan, covering continuity of care and eHealth.

Implementation perspective

Infrastructure: Norway has a dedicated healthcare network which interconnects the five regional health networks. Norsk Helsenett AS (Norwegian Health Net Ltd), which is owned by the regional health authorities, runs the network to ensure stability, up-time and confidentiality. It also provides a number of basic services like eMail, web, catalogues and registries of personnel. The network can be used for several services such as telemedicine and Electronic Data Interchange.

Telemedicine: Operational solutions are in place in a variety of medical disciplines and care situations. Some examples are:
- Sounds, images and videos recorded by the primary care doctor and transmitted to a specialist.
- Telepathology – remote pathology diagnostics support for hospitals lacking this capacity.
- Teleradiology – for consulting in emergencies, for second opinions and for consultations between the hospital and the primary healthcare sectors.
- Videoconferencing for psychiatry and cancer care.

Electronic Patient Records (EPR): A national EPR standard was released in 2001, mainly covering issues related to architecture, archiving and security. With few exceptions, all General Practitioners and private specialists have fully operational EPR systems and have built up practical experience over many years. All hospitals have, or are introducing, EPR systems, with current coverage at 97%.

Norway

A requirement specification for infirmaries and general healthcare in primary schools, and another similar requirement specification for community care, are based on the EPR standard. Since 2003 there is a test and acceptance scheme provided by the Norwegian Centre for Informatics in Health and Social Care (KITH) to ensure that supplied EPR systems conform to the standards.

Electronic information exchange: After a decade of experience in structured exchange of information via electronic messaging, data messages now cover a variety of applications, such as referrals and discharge letters, requests for results from medical services such as laboratory and radiology departmental reports to central authorities, and transfer of EPR information.

Future activities

INFRASTRUCTURE DEVELOPMENT
The Norwegian Health Net organisation provides a sector network for effective cooperation between the different service sections in the sector. Initiatives are in progress to harmonise the services from the five previous regional networks and establish a nationwide communications network with the potential for "seamless" communication across regions and between all the different actors.

TELEMEDICINE
Telemedicine solutions will be brought into use throughout the country to ensure a greater availability of home-based services. To achieve this, two types of measures are given priority:

* The stimulation of broadband development between hospitals, and between hospitals and the primary health services.

* The clarification of responsibility, rules, guidelines and costs in connection with telemedicine consultations.

EXTENDING EHEALTH IMPLEMENTATION TO SOCIAL CARE
Developments in this field will be co-ordinated and focused on topics that are currently considered most urgent; i.e. updated information on the use of medicines, co-operation on individual plans (a right to long term, coordinated care plans), well-functioning communication between the sectors when patients move from health to social care services and support from specialised health services to municipality based care.

LEGISLATION ASSESSMENT
Legislative research commenced in spring 2006 to describe ways in which the Norwegian Personal Data Act, the Health Registries Act and other acts are hindering progress in eHealth. This may lead to proposals for new legislation. In August 2006 the Directorate launched a code of conduct defining how the different health care organisations should treat patient and health information in order to comply with the national and European Data Protection Act.

OTHER AREAS OF ACTIVITY
* Portals: Implementation of a national eGovernment information portal serving all sectors, including health – in the first phase information about one's family doctor, ability to change the family doctor, and possibly access to ePrescriptions. Parallel work is ongoing to establish a nationwide PKI based authentication facility for the portal.

* ePrescription (eResept in Norwegian): Transfer of electronic prescriptions to pharmacies from General Practitioners and hospitals; ePrescription database to ensure free choice of pharmacy to collect drugs; electronic identification of patient, prescriptions and drugs at pharmacies; warnings and reminders, decision support and knowledge support is planned for the country's EPR systems. ePrescription is a collaboration between the Directorate for Health and Social Affairs, the National Insurance Service, the Norwegian Medicines Agency the Pharmacies Association, the Regional Health Enterprises, Doctors' Association, and

Norway

relevant national competence centres.

- Electronic Health Record: Research project started at the Norwegian centre for Electronic Health Records at the University in Trondheim to examine a collaborative patient summary concerning primarily medication information in a municipal setting.
- Multi-national cooperation in the field of eHealth. Cooperation with the other Nordic countries is well established at the level of national competence centres, and recently there has also been strengthened Nordic cooperation at political and governmental levels regarding eHealth. Expansion to cross-border networks, as demonstrated, for example, through the Baltic eHealth project, could be a future step in eHealth developments. Norway has also been active in broader international collaborations, through initiatives such as the Northern Dimension, the Co-operation Programme for Health and Related Social Issues in the Barents Euro-Arctic Region 2004 – 2007, and the World Health Organisation Collaborating Centre activities.

Core resources

Te@mwork 2007, National strategy 2004 – 2007 for Norway.
Ministry of Health and Ministry of Social Affairs, 2004
http://www.shdir.no/vp/multimedia/archive/00010/
IS-1267_E_10176a.pdf.
National Health Plan (2007 – 2010),
Ministry of Health and Care services, 2006
http://odin.dep.no/hod/english/048091-430009/dok-bn.html
Ministry of Health and Care Services
http://odin.dep.no/hod/english/bn.html
Norwegian Directorate for Health and Social Affairs
http://www.shdir.no/
Norwegian Board of Health
http://www.helsetilsynet.no/templates/sectionpage_____5499.aspx

Switzerland

Strategic perspective

The canton-based organisation of health care in Switzerland has presented significant challenges in the development of a national eHealth system in Switzerland. Most recently, a draft national strategy for eHealth was published by the Swiss Federal Council in December 2006 for review and comment by interested stakeholders. Following a series of consultations in 2007 the strategy will be submitted to the Upper House of Parliament, for definite adoption of resolutions.

The strategy draft was compiled in the context of a common project of the Federal Office for Health, the Federal Office for Communication as well as the Conference of the Directors of Health from each of the cantons. The strategy emphasises three aspects:

- Electronic patient record: Starting from 2015 a personal lifelong electronic patient record is to be available in Switzerland. This will be introduced on a phased basis. The objective is improved efficiency, quality and security. The prerequisites are strong privacy, data security, and clear governance rules.
- Online information and online service: Within the governmental mix of federation, cantons and municipalities the common focus and central aim is to enable the individual health authorities to avail of information and communication technology to provide qualitatively secured online information and online service.
- Conversion and advancement of the strategy: It is proposed that federal government and cantons agree responsibilities and create a common national co-ordination organisation in the year 2007 and that by end of 2008 they agree on the legal questions and establish the required legislation processes.

The national eHealth strategy recognises that these objectives and tasks can only be resolved in co-operation with the cantons, private organisations and in the international context (European Union, WHO). It has therefore proposed the establishment of public-private partnerships with industry and solution providers.

Implementation perspective

All cantons consider the introduction of a national health roadmap as being either "important" or "very important". They recognise that co-ordination is needed to define and agree legal and technical guidelines and safeguards and help ensure compatibility between the individual cantonal projects. At the same time, the implementation of eHealth projects is and remains a task for the cantons. Some previous top down initiatives in cantonal and federal health policymaking have been successful, e.g. the 1994 revision of sickness insurance laws which established compulsory insurance. The prospect of success of this top down planning for eHealth is further supported by the relative success of the TARMed medical tariff agreement. As of January 2004, the cantonal tariff agreements were replaced by a single tariff for out-patient services across Switzerland.

Turkey

Strategic perspectives

The "National Health Information System" initiative was established by the Ministry of Health of Turkey in 2003, with the goal to promote better healthcare services in Turkey by using the latest information and communication technologies. Ten working groups were formed with membership drawn from among others, governmental institutions, private sector, non-government organisations, universities and social partners, under the supervision and coordination of the Ministry of Health. An Action Plan was presented in January 2004, and in January 2005 a circular on health informatics standards was published.

The Ministry of Health plans to build the eHealth project on a solid base. Therefore a strategic goal of this project is to improve healthcare services in Turkey by developing a Secure Health Information Platform that enables healthcare providers (primary and secondary healthcare), health professionals, and citizens to have easy and safe access to health related information.

By mid 2007 Turkey's eHealth Initiative is expected to achieve:
- Agreements on national health information standards, and some pilot implementations whose scope will include: National Health Data Dictionary; Minimum Health Data Sets; Minimum-Electronic Health Records model for, e.g., family physicians, primary, secondary and tertiary health care services, laboratories, and imaging centres; data interchange standards.
- Citizen online access to health data on a secure platform.
- Regular use of telemedicine applications, such as teleconsultations and remote monitoring, in rural and remote regions.
- A health data interchange infrastructure between primary and secondary healthcare providers.

Implementation perspective

National Health Information System (NHIS) project: under the scope of the strategic perspective outlined above, the Ministry of Health has issued a call for tender as a first step to achieve its desired goals. It is expected that this project will be operational in selected pilot health care providers in late 2007.

The Family Physician Information System (FPIS) aims to register each citizen with a family physician in his or her residence area, who then acts as a gatekeeper to specialist and other secondary care. The FPIS has a central Electronic Patient Record (EPR) database system located in the Ministry of Health. The system, which consists of minimum sets of family health data gathered from the physicians, was launched on 1 August 2005 with an initial group of 104 family physicians in "Duzce Province", and is currently being expanded to include an additional 3,000 family physicians in ten provinces. It will be extended nationwide in 2007.

Future activities

Tele Medicine Pilot Study: The TeleDiagnostic services to be provided initially are in the areas of remote radiology, pathology and ultrasound services. It is expected that a comprehensive pilot will be in operation during the first quarter of 2007.

Usage of smart (health) cards: It is expected that health cards containing personal emergency data sets will be introduced for use in selected pilots during the second quarter of 2007.

Core resources

Ministry of Health of Turkey
http://www.saglik.gov.tr

Notes

Notes

Notes

Europe Direct is a service to help you find answers
to your questions about the European Union
Freephone number (*):
00 800 6 7 8 9 10 11
(*) Certain mobile telephone operators do not allow access
to 00 800 numbers or these calls may be billed.

Design & Print by OIB using environmental print technology   EMAS

eHealth
priorities and strategies
in European countries

For further information, please contact:

European Commission
Information Society and Media Directorate-General
Directorate H - ICT for Citizens and Businesses
Unit H1 - ICT for Health
Phone: +32 2 296 69 49
Fax: +32 2 296 01 81
eHealth@ec.europa.eu
http://ec.europa.eu/information_society/ehealth